Technical Note

Project: Cambridge North

Subject: Response to Cambridgeshire County Council Highway Comments

Client:	Brookgate	**Version:**	P1
Project No:	5425	**Author:**	EK
Date:	Oct 2022	**Approved:**	MJE

1 Introduction

1.1 Overview

1.1.1 This Technical Note (TN) has been prepared by PJA on behalf of Brookgate Land Limited in connection with planning application 22/02771/OUT comprising a hybrid application for mixed-use development at Cambridge North.

1.1.2 This TN sets out details of assessment work undertaken to inform responses to comments made by Cambridgeshire County Council (CCC) in its role as Local Highway Authority (LHA), a statutory consultee to the planning application.

1.2 Planning Application Comments

1.2.1 CCC's Transport Assessment Team issued comments on the planning application dated 7th September 2022. A separate schedule has been prepared setting out CCC's comments that require a response and is appended to this report at Appendix A. This TN responds to comments 11, 22, 24 and 25, copied below:

"Comment 11 The applicant proposes a mobility hub with 725 parking spaces, of which 622 are to be provided for rail users, 20 for the Novotel, and the remaining 83 for the commercial development. This will provide the existing surface car park, as well as the expected additional parking required for the railway station. … The applicant has not detailed the basis of the request from the rail industry, and for the larger car park of 622 spaces. Therefore the additional spaces are not justified."

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"Comment 22 Whilst the above methodology does set out how the trip generation to this site can be assessed, the TA does not refer to what the potential additional vehicle trip generation to the wider area could be. If parking in the surrounding residential areas remains uncontrolled, could there be the potential for employees to drive to the surrounding area and park, and then walk into the site? If there is to be an improved linkage between Milton Park and Ride and the site, could employees drive to Milton Park and Ride and then travel by public transport for the last mile to the site? The latter avoids any trip generation on Milton Road and the NEC AA trip cap, but could result in trip generation on the A14 and A10 between the A14 and Milton Park and Ride. The former could result in additional trips on the NEC AAP vehicle trip cap."

"Comment 24 The non-car driver mode shares in table 5.2 assume that 22% of trips will be by train, 13% are walk or run, and 47% are cycle. Whilst these mode shares may be representative of the CB1 area, the applicant has not undertaken further analysis to demonstrate that they would be representative of this area. This would be by referring to local census data for travel to work data, or by comparing to Travel Plan Plus data for the Science Park area."

"Comment 25 The applicant has also not considered where people currently live, where they might live in the future when this development is built and whether any of the existing passenger transport routes will serve as viable options to travel to and from the site. The applicant has not detailed whether any of the residents living in the new dwellings work in the surrounding area, whose trips could be considered internal?

The applicant has not detailed how many employees might work in the buildings and what the approximate number of employees could be living in each part of the surrounding area could be.

The applicant has also not considered where the future strategic transport is to be implemented, and therefore what proportion of the future trips to the area will be able to benefit from these measures, and also what proportion of new employees to the area will be able to use this infrastructure, and therefore what the additional journeys by each mode could be, as well as the potential mode share of trips could be to the development. This has not been related to what the potential capacity of the public transport and cycle network will be in the future, so as to demonstrate that this will be able to cater for the demand from this site.

In summary the applicant has not detailed where people will live in the future, and how any strategic transport measures to be implemented will enable this development to achieve its

ambitious car driver mode share projections, and therefore to meet the objectives of the NEC AAP trip budget approach and its high level transport strategy."

1.3 Outline

1.3.1 The sections of this TN are set out to respond to each of the topics covered in the comments set out above comprising car parking provision, the mode share of trips and trip origins and destinations. This TN details the methodology adopted for the purposes of responding to CCC's comments, followed by the results of the assessment, and analysis.

2 Comments 11 and 22: Car Parking Provision

2.1 Overview

2.1.1 This section addresses CCC's Comment 11 relating to the justification for the additional rail-related car parking provision within the proposed Mobility Hub, and Comment 22 which questions the potential for off-site car parking to occur in the local area.

2.2 Car Parking Strategy

2.2.1 Cambridge North Station currently provides 428 at-grade car parking spaces. The location of the parking was moved in the Network Rail station submission to run parallel to the railway line for a number of reasons, one was to free up land for development around the station but a specific and defined part of the rationale was to allow for decked expansion to meet any future growth. Future proofing was a key element of the redesigned station.

2.2.2 The removal of the station surface car parking is beneficial to the place making of the new development but in constructing a new purpose-built facility the safeguarding of potential future rail parking has to be built in from the outset.

2.2.3 As part of the redevelopment of the site, it is proposed that the existing 428 spaces be relocated into the multi-storey mobility hub. In addition, it is proposed that an additional 194 spaces also be provided in the mobility hub for potential rail-related use should further growth in passenger demand occur in the future.

2.2.4 This proposal therefore retains the option for further rail-related parking provision, currently available via decking, when the current rail-related spaces are relocated into the mobility hub.

2.2.5 The rail industry has indicated that retaining the flexibility to provide further parking for passengers is important to them. However, the time period over which passenger demand might grow, and hence trigger the potential need for additional spaces, is still uncertain.

2.2.6 It is therefore proposed that the additional 194 spaces are used flexibly over time as summarised below:

- The spaces would continue to be safeguarded for potential rail-use in the longer term.
- Initially, the additional spaces would be used by early tenants of buildings proposed in the current planning application – CCC has verbally indicated that they accept that there might be a need for higher levels of trip-making in the short to medium term as the NEC area transitions to a low car future, subject to the end-state still operating within the vehicle trip budget. Analysis is provided below to support this proposition.
- As future phases of development at Cambridge North come forward, the use of those spaces would be de-allocated from current users and reallocated to future occupants.
- At the same time, the use of the current levels of rail-related parking (428-spaces) would be monitored. Should demand approach 85% of capacity, and subject to the appropriate approvals at that time, the spaces could then be reallocated for rail passenger use and de-allocated from other users.
- It is proposed that this arrangement can be secured as part of the S106 agreement.

2.3 Vehicle Trip Assessment

2.3.1 In light of the above strategy, the travel demand analysis presented within the TA at Section 5 has been revisited to include the higher quantum of car parking provision being utilised by the commercial element of the scheme.

2.3.2 The methodology adopted remains the same as that presented within the TA, but for the revised total of 611 car parking spaces being available to the commercial uses:

- The vehicle trip arrival and departure and accumulation profiles as agreed with CCC are used
- The sensitivity analysis for the lab uses, adopting an alternative profile for arrivals and departures has also been revisited for the increased quantum of car parking
- The car parking availability has been split proportionately between the office and lab uses according to the allocation of basement spaces dedicated to each use
- The ground floor uses are considered to support the wider development and have been excluded from the overall trip generation, as agreed with CCC

2.3.3 The spreadsheet model included at Appendix E of the TA has been updated, and a copy is included at Appendix B of this TN.

2.3.4 Table 2.1 presents the peak hour vehicle trip generation based upon a total of 611 car parking spaces being available for the commercial uses (labs and offices), updating Table 5.5 of the TA.

Table 2.1: Commercial Development Forecast Vehicle Trip Generation

	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
	Arrivals	Departures	Arrivals	Departures
Car Driver	171	18	21	174

2.3.5 Table 2.2 provides a comparison of the total forecast vehicle trip generation (commercial and residential uses) against the proportion of the draft NECAAP vehicle trip budget assigned to Cambridge North, updating Table 5.8 of the TA.

Table 2.2: Comparison of Vehicle Trips Against Trip Budget

	Forecast Vehicle Trip Generation		Vehicle Trip Budget		Remaining Trip Budget	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
AM Peak (08:00 – 09:00)	173	26	214	142	41	116
PM Peak (17:00 – 18:00)	27	177	92	182	65	5

2.3.6 Table 2.2 indicates that the proposals are forecast to operate within the draft vehicle trip budget assigned to Cambridge North, with a 'headroom' level of trips remaining across all directions in both the AM and PM peak hours. The conclusions of the assessment within the TA for this scenario remain unchanged.

Lab Sensitivity Test

2.3.7 The sensitivity test scenario which uses alternative vehicle trip arrival and departure profiles for the proposed labs has been updated for the increased car parking quantum.

2.3.8 Table 2.3 provides a summary of the peak hour vehicle trips for the full development, comparing against the vehicle trip budget, updating Table 5.12 of the TA.

Table 2.3: Sensitivity Test Scenario, Comparison of Vehicle Trips Against Trip Budget

	Forecast Vehicle Trip Generation		Vehicle Trip Budget		Remaining Trip Budget	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
AM Peak (08:00 – 09:00)	220	51	214	142	-6	91
PM Peak (17:00 – 18:00)	25	187	92	182	67	-5

2.3.9 The analysis indicates that the forecast number of AM peak hour departures and PM peak hour arrivals remain well within the vehicle trip budget figures, with significant headroom. The sensitivity analysis forecasts that the AM peak hour arrival and PM peak departure trip budgets would just be exceeded, by 6 and 5 vehicle trips respectively. This minor level of variation from the vehicle trip budget is not considered to be significant, with the overall level of two-way trips remaining significantly below the vehicle trip budget for Cambridge North.

2.4 Summary

2.4.1 This section has set out a response to CCC's comments in respect of the proposed car parking provision for rail-related use within the Mobility Hub. A strategy has been proposed to enable the short-term use of the additional 194 car parking spaces provided by the development to assist with transitioning to operating within the low car environment proposed by the scheme. These principles have been discussed with CCC during pre-application discussions in relation to this scheme and reflect the transitional arrangements for other consented developments locally (CB1 development, One Cambridge Square and Novotel at Cambridge North). In the longer term, the spaces would be either unallocated from the proposed development for use by later phases or, subject to demand and the appropriate approvals at the time, re-allocated for rail passenger use.

2.4.2 Despite this arrangement being envisaged as short-term, its impacts on the assessment of vehicle trips against the portion of the NECAAP vehicle trip budget assigned to Cambridge North has been assessed. The analysis suggests that the proposals, if permitted, would remain broadly in line with the overall vehicle trip budget.

2.5 Environmental Assessment

2.5.1 The changes in traffic flows resulting from the proposed car parking strategy have also been considered against the methodology applied within the Environmental Statement Transport chapter. The increase in vehicle movements associated with the additional car parking spaces are not considered to alter the predicted effects and therefore the proposed mitigation and conclusions of the Transport ES Chapter remain unchanged.

2.6 Comment 22

2.6.1 Comment 22 questions whether additional car parking demand from the development of Cambridge North could be generated within the wider local area, due to un-restricted on carriageway parking, or at the Milton Park and Ride site, resulting in development related vehicle trips on the A14 and A10 to access the Park and Ride site.

2.6.2 The analysis in Section 4 of this TN addresses this point further however, within the submitted TA at Section 6.4 is discussion around a package of mitigation measures both on-site within the masterplan, and off-site that would further facilitate trips to and from the site by non-car modes of transport. One such measure listed is the monitoring of local car parking in order to identify whether off-site car parking attributable to the development is taking place within the local area, and whether there is a need to implement a residents parking scheme. This measure has been outlined within the draft Section 106 Heads of Terms document and further discussion would be welcomed with the County Council on this, and the other measures proposed.

3 Comment 24: Mode Share

3.1.1 Comment 24 of CCC's consultation response refers to mode share data presented within the TA submitted alongside the application. The data, at Section 5.5 of the TA, is Smart Journeys[1] survey data from 2019 for commercial occupiers in CB1, with a five-day average mode share presented in the TA.

3.1.2 At pre-application stage, the use of mode share data for CB1 was agreed as acceptable. As stated at paragraph 5.5.2 of the TA, the accessibility characteristics and levels of car parking provision at the proposed development draw parallels to the characteristics of CB1 adjacent to Cambridge station.

3.1.3 In Comment 24, CCC has suggested referring to local Census data or comparing to Travel Plan Plus data for the Science Park area. The latest available Census data containing method of travel to work dates from 2011 when the transport geography of the local area, and that of the Science Park was very different. Furthermore, the Science Park itself provides significantly higher levels of car parking than are proposed at Cambridge North which would be expected to result in a higher car mode share.

[1] Smart Journeys is a not-for-profit commercial enterprise hosted by Cambridgeshire County Council that advises and supports employers, residential developers and schools in Cambridgeshire to implement and promote sustainable active travel. As part of its services, Smart Journeys undertakes Travel Plan monitoring surveys.

3.1.4 These reasons further underline why it is considered that the CB1 data presented within the TA provides an appropriate comparator for Cambridge North. Notwithstanding this point, the journey origin/destination assessment outlined in Section 4 of this TN does consider mode share within a sensitivity assessment.

4 Comment 25: Origin Destination Assessment

4.1 Overview

4.1.1 This section addresses points raised within Comments 22, 24 and 25 of CCC's response relating to journey origins and destinations, mode share and car parking. The methodology adopted within this assessment is outlined for both commercial and residential land uses. The methodology seeks to address the key points from CCC's comments, specifically:

- Where people working at Cambridge North may live, and how this may change in the future
- Whether any residents within Cambridge North would work in the surrounding area, i.e. internal trips
- The forecast mode share of trips to work at Cambridge North

4.2 Commercial Development

4.2.1 The following points outline the steps in the methodology adopted for the assessment of trips associated with the proposed commercial development:

- Data from the 2011 Census has been interrogated for journey origins for journeys to work in the South Cambridgeshire 007 mid-level super output area (MSOA). Trip origins from within Cambridge City, South Cambridgeshire District and the neighbouring authority areas of Central Bedfordshire, East Cambridgeshire, Forest Heath, Huntingdonshire, North Hertfordshire, St Edmundsbury and Uttlesford have been assessed and the mode share of trips from each of these locations established.
- The proportion of arrivals to the South Cambridgeshire 007 MSOA, within which the proposed development is located, was established from each of these geographical areas (Cambridge City, South Cambridgeshire district and the neighbouring authority areas).
- To account for future changes in employee home locations, reflecting significant future growth at Waterbeach, Northstowe and within the North East Cambridge AAP area, changes in resident population has been used to factor trip origins and to reflect the likelihood that a higher number of trips would originate from these locations in future. Household growth factors from TEMPro has been used applied to all areas from 2011 to 2041 to reflect the

emerging local plan timescales. Some further manual adjustments have been applied in the locations outlined above.

- Bidwells' economic assessment of the scheme indicates that it could provide 4,296 additional jobs, split across full and part-time roles, and between the ancillary ground floor uses (277 roles), support roles (security, cleaning, maintenance etc., 402 roles) and professional roles within the offices and labs. The latter category comprises 3,617 potential employees. Recent research published by the British Council for Offices (BCO) [2] into changing work patterns and occupancy levels post-pandemic has been adopted to establish a forecast typical employee attendance rate on workdays of 73%. The assessment has therefore assumed that 2,938 employees represents a robust assessment of the typical workday attendance.
- This number of employees has been distributed across the MSOAs and neighbouring authority areas according to the percentage of arrivals to the South Cambridgeshire 007 MSOA observed in the 2011 base data, adjusted to reflect the significant future population changes outlined above.
- Due to the nature of the employment destinations in the South Cambridgeshire 007 MSOA being very different to that proposed (employment sites with extensive car parking provision i.e. Cambridge Science Park and light industrial uses in Milton), the mode share of trips to another area of employment on the southern side of Cambridge has also been considered. The Cambridge 012 MSOA was assessed as this area includes employment sites in similar proximity to the strategic road network, but also areas in proximity to a train station and busway access (although this was not operational in 2011 at the time of the Census). It therefore provides a useful baseline comparator of potential mode share including rail trips for informing the future assessment.

4.2.2 The assessment has adopted a 'decide and provide' approach. Baseline mode share data has been reviewed, and opportunities for travel by non-car modes considered from each respective origin. It should also be noted that since 2011 when the Census data was captured, there has been significant changes to the transport geography of the local area including the establishment of the Cambridgeshire Guided Busway – statistics show that the rolling total number of passenger journeys increased nine-fold over the period from August 2011 to August 2019 – and the opening of Cambridge North Station in 2017. More recently, the Chisholm Trail and pedestrian and cyclist bridge over the River Cam immediately to the south of the site at Cambridge North further enhances accessibility of the site by walking and cycling from locations in the south and east of the City. Furthermore, new forms of transport such as e-scooters and

[2] *The Future of UK Office Densities, BCO, September 2022*

electric bikes are playing an increasingly important part in the transport mix, extending the range of trips by non-motorised transport.

4.2.3 Looking forward, e-scooters and electric bikes are likely to continue to grow in significance in terms of the transport mix for short to mid length journeys. Alongside this, there would be other push factors such as the GCP initiatives considering road user charging which would also weigh into decision making over travel patterns.

4.3 Residential Development

4.3.1 The following points outline the steps in the methodology adopted for the assessment of trips associated with the proposed residential development:

- Census 2011 data for the South Cambridgeshire 007 MSOA has been used to identify the number of resident trips to work within Cambridge City MSOAs, South Cambridgeshire District MSOAs and the neighbouring authority areas of Central Bedfordshire, East Cambridgeshire, Forest Heath, Huntingdonshire, North Hertfordshire, St Edmundsbury and Uttlesford.
- A forecast of the working population of the proposed development has been established with reference to average dwelling occupancies averaged from data presented within the Socio-Economic chapter of the Environmental Statement (1.7 people), and the proportion of economically active residents (90%) based upon data presented within the Socio-Economic chapter of the Environmental Statement, prepared by Bidwells.
- The working population has been distributed across the workplace destinations according to the observed split of trips established by the 2011 Census data.
- Given the presence of Cambridge North station, the Cambridgeshire Guided Busway and restricted car parking provision available to residents, mode share data from a range of central Cambridge MSOAs has been reviewed from the 2011 Census to establish a baseline. The Cambridge 008 MSOA, covering the Petersfield area, adjacent to Cambridge Station shares some of the site's public transport accessibility characteristics and demonstrated the lowest car driver mode share and has therefore been adopted as a starting point for the purposes of the assessment. For robustness, the car driver mode share has been set to 0% on the basis that residential car parking would be leased, and very limited in supply. The baseline mode shares from the Cambridge 008 MSOA to each workplace destination has then been reviewed to inform the forecast.

4.3.2 The baseline Census data can only provide an indication of the workplace destinations for future residents. Due to the limited car parking provision on site, consideration of access to workplace

locations would be expected to be a significant factor in the decision on whether or not to move to the development – if the commute would be difficult or time consuming to undertake by non-car modes, then this is likely to be considered prior to moving. The distribution of workplace destinations therefore might be expected to vary from the 2011 baseline data as a result of this.

4.4 Assessment Results and Analysis

Commercial Development

4.4.1 The assessment has forecast that journeys to work at Cambridge North would be drawn from the locations as summarised in Table 4.1.

Table 4.1: Forecast Home Locations for Journeys to Work at Cambridge North

Home Location	Percentage of Cambridge North Employee Arrivals
Cambridge City	27%
South Cambridgeshire	39%
Central Bedfordshire	34%
East Cambridgeshire	
Forest Heath	
Huntingdonshire	
North Hertfordshire	
St Edmundsbury	

4.4.2 The forecast mode share for peak period journeys to work at Cambridge North are summarised in Table 4.2.

Table 4.2: Forecast Cambridge North Commercial Peak Period Mode Share

	Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot
Cambridge City Forecast Mode Share	7%	15%	0%	1%	5%	3%	52%	17%
South Cambridgeshire Forecast Mode Share	11%	17%	0%	2%	34%	4%	25%	8%
Neighbouring Districts Forecast Mode Share	39%	18%	0%	0%	31%	9%	3%	0%
Overall Forecast Mode Share	**19%**	**17%**	**0%**	**1%**	**25%**	**5%**	**25%**	**8%**

4.4.3 Table 4.2 illustrates how the mode share is forecast to vary across the journey origins. Within Cambridge, car driver mode share is expected to be very low due to the opportunities for access to the site by walking, cycling and public transport modes. Passengers are assumed to be car sharers. Within South Cambridgeshire the mode share reflects the fact that the site itself is located within the district, and opportunities for access by bus and bike via the Cambridgeshire Guided Busway, and train from Waterbeach. Within the neighbouring districts, the opportunity for access to Cambridge North by train becomes significant, particularly from locations such as East Cambridgeshire (Ely) which is forecast to generate a significant level of trips to the site. The full calculations and assumptions are included at Appendix C.

Residential Development

4.4.4 The analysis of resident origin-destination 2011 Census data for the South Cambridgeshire 007 MSOA identified the forecast split of workplace destinations set out in Table 4.3.

Table 4.3: Forecast Workplace Locations of Journeys to Work for Residents of Cambridge North

Workplace Location	Percentage of Cambridge North Resident Journeys to Work
Cambridge City	55%
South Cambridgeshire	34%
Central Bedfordshire	10%
East Cambridgeshire	
Forest Heath	
Huntingdonshire	
North Hertfordshire	
St Edmundsbury	

4.4.5 The forecast resident peak period mode share resulting from the assessment is set out in Table 4.4.

Table 4.4: Forecast Cambridge North Residential Peak Period Mode Share

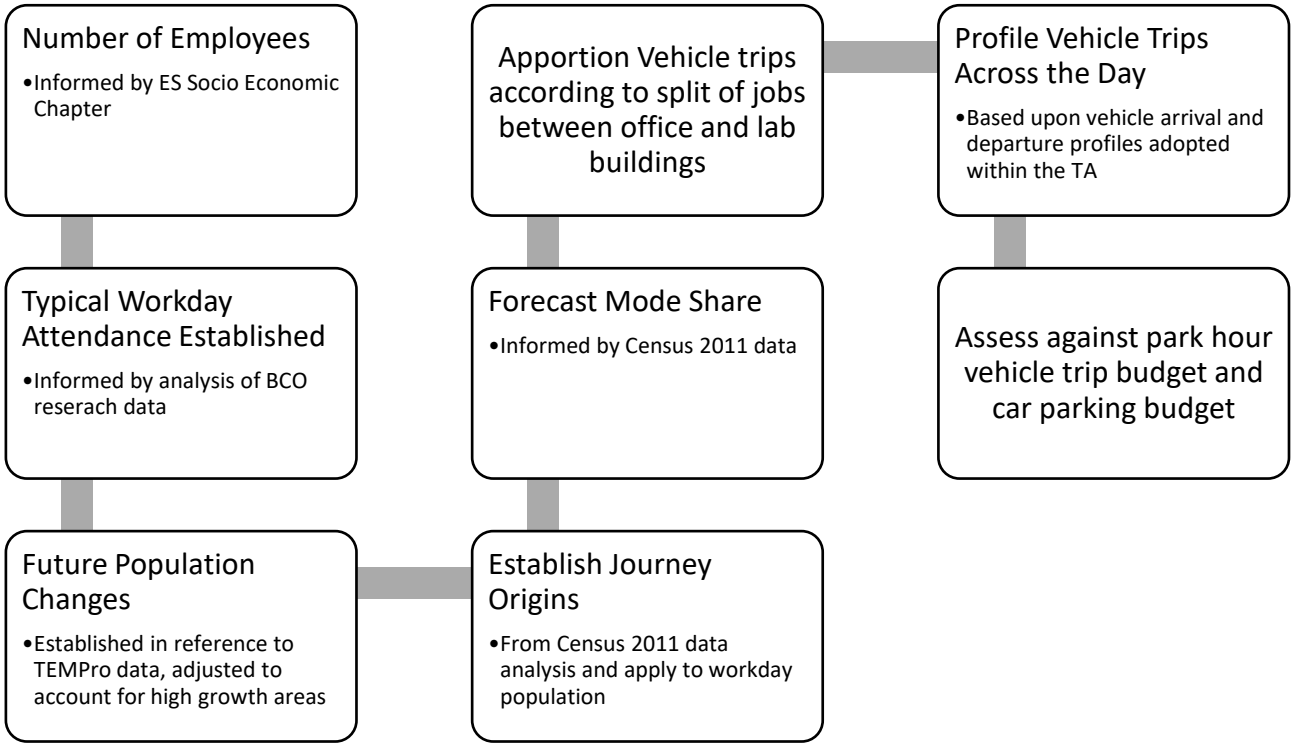
	Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot
Forecast Mode Share	15%	23%	1%	0%	0%	1%	48%	12%

4.4.6 For residents, it is anticipated that cycling would represent the highest proportion of the mode share, at 48% of trips. This reflects the high proportion of workplace locations within Cambridge City, which are well within range of trips by bicycle and e-bike. Bus and train are forecast to accommodate the majority of the remaining trips, reflecting the site's location adjacent to Cambridge North station and the Cambridgeshire Guided Busway. The full calculations are included at Appendix D.

Analysis

4.4.7 As agreed with CCC at pre-application stage, the use of mode share data from CB1 is considered appropriate for understanding how people will likely travel in the future to Cambridge North. However, in light of the mode share calculated within the origin destination assessment, and for robustness, a sensitivity test has been undertaken to re-run the trip generation of the proposals, adopting the alternative mode share.

4.4.8 The methodology outlined above has been summarised below in a flow diagram setting out the steps adopted within the sensitivity analysis.



4.4.9 The vehicle trip calculations are contained at Appendix E. The results of this sensitivity test assessment demonstrate that, even with a higher car driver mode share, the proposed development would still operate within the peak hour vehicle trip budgets and car parking budget. Application of the lab sensitivity test trip profiles forecasts a slight exceedance of the AM arrival trip budget however, all other peak hour movements sit within the vehicle trip budgets. If an average profile of the two labs were adopted, the analysis as presented at Appendix E demonstrates that vehicle trips across all movements in both peak hour, and the car parking budget would be satisfied. Referring back to CCC's comment 22 relating to the potential for off-site parking demand to occur, this sensitivity assessment further supports the findings of the TA, that demand for additional car parking in residential areas or at the Milton Park and Ride is not anticipated to occur as a result of the proposals.

Summary

4.4.10 The TA included an analysis of mode share data for the CB1 area of Cambridge. This location was selected due to the similarities with the proposed development; commercial development with very limited car parking provision located adjacent to a train station and the Cambridgeshire Guided Busway. The car driver mode share from the survey data is 11.3%. Whilst the proposed development is located further from the centre of Cambridge, the city is compact, and the

distances from many home locations within the city are relatively short. Whilst this sensitivity assessment has identified an alternative mode share, with a higher car driver split, it has been shown that it is expected to operate in line with the vehicle trip budgets and parking budget across a number of scenarios considered. Furthermore, with reference to the survey data from CB1, it is considered that the proposed development presents an opportunity to deliver a low car driver mode share as demonstrated by this data due to the similar transport geography and complimentary mix of uses proposed, coupled with the 'push' factor of low levels of car parking provision.

5 Summary and Conclusions

5.1 Summary

5.1.1 This TN has been prepared by PJA on behalf of Brookgate Land Limited in connection with planning application 22/02771/OUT. The report has been prepared to respond to comments made by Cambridgeshire County Council in its role as Local Highway Authority in its consultation response dated 7th September 2022.

5.1.2 This TN is accompanied by a schedule which responds concisely to those comments where this is possible.

5.1.3 Comments 11 and 22 relate to the proposed car parking provision. Comment 11 seeks justification for the additional 194 spaces that were proposed as rail related car parking to cater for future growth. The approach to the management of these spaces has been reviewed, and an alternative strategy proposed.

5.1.4 Comment 22 questions the potential for vehicle trip generation to occur within the wider area as a result of the proposed development, questioning whether parking could occur on surrounding residential streets, or additional trips be generated to the Milton Park and Ride. The TA and draft Section 106 Heads of Terms include a package of potential mitigation measures for further discussion with the LHA and LPA, one of which is the monitoring of local car parking. Furthermore, the analysis presented within the TA, and within this TN have demonstrated that the forecast mode share of trips would not be expected to generate demand for any off-site car parking provision.

5.1.5 The mode share of trips to/from Cambridge North was raised at Comment 24 of CCC's response, where the application of data from CB1 presented within the TA was questioned, suggesting comparison with Census travel to work data or Travel Plan Plus data relating to the Science Park. Use of data for CB1 as a suitable comparator was agreed with CCC at pre-application stage, due

to the similarly constrained levels of car parking proposed at Cambridge North, and the accessibility of the development by train and the Cambridgeshire Guided Busway. The Science Park is not considered a suitable comparator site due to the significant levels of car parking provided, and Census data on method of travel to work dates from 2011, predating Cambridge North Station and the commencement of services on the Cambridgeshire Guided Busway.

5.1.6 Despite these points, a sensitivity analysis has been undertaken, informed by Census data and adjusted to account for the opportunity for access to the proposed development by walking, cycling and public transport modes, coupled with the restrictive approach to car parking provision. This assessment, based upon a forecast of home locations for future employees and identifying a higher car mode share than the CB1 survey data, has been tested against the peak hour vehicle trip and car parking budgets and demonstrated as continuing to operate within these levels. This should provide the LHA with comfort that the proposals would continue to operate within the Cambridge North portion of the AAP peak hour vehicle trip budgets even in the event that the car mode share were notably higher than that observed for similar development at CB1.

5.1.7 Comment 25 of CCC's consultation response questions where people will live in the future and how they may travel to Cambridge North. A detailed assessment has been undertaken with reference to Census data, factoring in forecast population growth to provide an indication of the potential future home location of employees at Cambridge North. This information has been adopted for the purposes of informing the sensitivity analysis presented in response to Comment 24.

5.2 Conclusions

5.2.1 In conclusion, the travel demand calculations are robust and based upon empirical evidence. Justified mode split forecasts produce vehicular trips that demonstrate that the proposed development sits within the Cambridge North portion of the vehicle trip budgets established in the Mott MacDonald Transport Evidence Base. Therefore, it can be said that the residual cumulative impact of this development on the road network, in accordance with paragraph 111 of the NPPF, would not be severe.

5.2.2 It has been demonstrated that the site is exceptionally well connected by public transport via the Cambridgeshire guided busway, other bus services and rail services from Cambridge North station and active travel networks such as the Chisholm Trail, in one of the most sustainable areas of Cambridge. This is also in the context of Cambridge as a city moving towards introducing schemes that discourage the use of cars. On this basis, further mitigation is not required.

5.2.3 In order to proactively encourage people to travel sustainably, the applicant is prepared to provide the following measures as outlined within the submitted TA:

- Mobility hub
  - Car club provision
  - Cycle/e-scooter hire provision
- Milton Park and Ride shuttle bus
- On-site network of cycle routes connecting the wider area
- Crossing provision on Milton Avenue
- Package of traffic calming measures along Chesterton Way as the busway enters Cambridge North Off-site works to Cambridgeshire Guided Busway to remove vehicle traps and replace with ANPR
- Cowley Road highway improvement works to enhance the route to/from Cambridge North station
- Monitoring of local car parking
- Wayfinding
- Public transport information terminal
- Extended bus shelter provision at Cambridge North station
- Lighting improvements to Station Square and Milton Avenue

5.2.4 Concerns have been raised regarding the quantum of car parking proposed within the mobility hub, and the potential for car parking to occur on surrounding residential streets. Both of these matters can be dealt with by condition or Section 106 agreement and the applicant has offered a contribution within the draft Section 106 Heads of Terms towards the implementation of a residents parking scheme, should this be deemed necessary following initial monitoring surveys.

Appendix A Schedule of Responses to CCC Comments

Application 22/02771 Cambridgeshire County Council Highway Response dated 07/09/22

Item	Ref	Comment	Response
1	Para 2	The applicant is asked to clarify how the different quoted areas in the application relate to each other, and whether the reference in the TA accurately reflects the application	The quoted areas are accurate however, reflect different measurement criteria. The planning statement refers to a total of 53,700sqm of commercial floorspace. This measure is NIA. The TA refers to circa 65,000sqm however, this is GIA. The application form refers to total gross internal floorspace areas.
2	Comment 4	The applicant has not made direct reference between the routes provided in the masterplan and the routes within the spatial framework plan and the movement and connectivity plan for the wider area as set out in the North East Cambridge Area Action Plan	The movement and connectivity plans within the draft AAP informed the masterplan development from an early stage. The routes provided would enable onward connection to future development phases.
3	Comment 11	The current provision of 20 spaces for the Novotel is also not clear. The applicant has not detailed the basis of the request from the rail industry, and for the larger car park of 622 spaces. Therefore the additional spaces are not justified.	Please see attached Transport Assessment Addendum which provides a response to this comment.
4	Comment 12	Further to the clarification requested on the floor areas of the development, should this be different to 65,000 then the above analysis may require updating	See response to item 1 above.
5	Comment 14	The applicant has not detailed how a tenant or someone purchasing a home would be prevented from owning a car in this development, and how it can be maintained as car free. Detail on this is required at this stage of the application, to enable the accuracy of this assumption to be known. It is unclear how any potential 'overspill' of parking to other areas will be managed. This is key given that in some areas around the site there are currently no parking restrictions.	For the buld-to-rent dwellings, Brookgate is able to control car ownership via lease agreements with tenants. For the dwellings for sale, this would be managed. Brookgate proposes to monitor and manage the car parking on site. Section 6.4 of the TA refers to Mitigation Measures, one of the identified measures is the monitoring of local car parking, which reflects the NECAAP Transport Evidence Base. Such as measure would seek to address any 'overspill' parking that occurs in the vicinity however, it is worth noting that there are no reports of current 'overspill' parking associated with the opening of Cambridge North train station.
6	Comment 22	If parking in the surrounding residential areas remains uncontrolled, could there be the potential for employees to drive to the surrounding area and park, and then walk into the site? If there is to be an improved linkage between Milton Park and Ride and the site, could employees drive to Milton Park and Ride and then travel by public transport for the last mile to the site? The latter avoids any trip generation on Milton Road and the NEC AA trip cap, but could result in trip generation on the A14 and A10 between the A14 and Milton Park and Ride. The former could result in additional trips on the NEC AAP vehicle trip cap.	Please see attached Transport Assessment Addendum which includes analysis to address this comment.
7	Comment 24	The non-car driver mode shares in table 5.2 assume that 22% of trips will be by train, 13% are walk or run, and 47% are cycle. Whilst these mode shares may be representative of the CB1 area, the applicant has not undertaken further analysis to demonstrate that they would be representative of this area. This would be by referring to local census data for travel to work data, or by comparing to Travel Plan Plus data for the Science Park area	Please see attached Transport Assessment Addendum which presents the analysis requested in response to these comments.
8	Comment 25	The applicant has not detailed whether any of the residents living in the new dwellings work in the surrounding area, whose trips could be considered internal? The applicant has also not considered where the future strategic transport is to be implemented, and therefore what proportion of the future trips to the area will be able to benefit from these measures In summary the applicant has not detailed where people will live in the future, and how any strategic transport measures to be implemented will enable this development to achieve its ambitious car driver mode share projections, and therefore to meet the objectives of the NEC AAP trip budget approach and its high level transport strategy	
9	Comment 26	The Travel Plan that supports the application does not consider in detail how travel enhancements and demand management measures, and future monitoring for this area will help the site to be able to adhere to its strict trip budget	The submitted Travel Plan reflects that approved in connection with One Cambridge Square. We would welcome further discussion with CCC in respect of the Travel Plan.
10	Comment 31	the applicant has not gone into detail as to exactly how the suggested measures would operate or directly benefit the site. Further detail is required in this respect	Comment 32 refers to further discussion with the LPA being required to ascertain the level of contribution sought from the development. The responses to the above queries should enable this to be considered and in turn facilitate a discussion around S106 measures and contributions.

Appendix B Cambridge North Spreadsheet Model

Parking Allocation

	Spaces	Notes
Cambridge North AAP parking budget	873	

Existing/Committed Parking

	Spaces	Notes
OCS basement provision	53	
OCS disabled parking provision	3	Three on-street
Hotel provision	20	Currently provided in surface car park, to be accommodated within Mobility Hub capacity
Existing rail provision	428	
Future rail/flexible use provision		Updated 21/09/22 to reflect revised use strategy
Total rail related provision:	428	

Proposed Development

	Spaces	Notes
Mobility Hub capacity	725	Designs from 25/04/22. Includes 20 standard bays for hotel

Commercial Development

One Milton Avenue basement (S4)	60	
One Station Row basement (S6)	60	
Three Station Row basement (S7)	60	Parking space numbers as agreed with ACME, DBA and Brookgate 27/04/22
Two Milton Avenue basement (S8) One Chesterton Square basement (S9)	141	
Total basement parking provision	*321*	
Within Mobility hub	277	(Mobility Hub capacity - rail related provision - hotel provision)
Commercial on-street disabled provision	13	Agreed with ACME, DBA and Brookgate 27/04/22
Total parking provision for commercial uses	**611**	(Mobility Hub capacity - existing rail provision - hotel provision + on-street disabled provision + basement provision)
Residual parking budget quantum	*262*	*(Parking Budget - commercial development)*

Residential Development

On-street disabled spaces	22	Brookgate spreadsheet dated 22/02/22
Basement provision	0	
Total residential:	22	
Residual parking budget quantum	*240*	

Commercial Development Breakdown

Commercial Floorspace Split
Source: Bidwells Planning Statement Table 2

Office Space	10,648	22%
Lab space	37,699	78%
Total:	48,347	100%

Commercial Parking Space Allocation

Office parking	64	10%
Lab parking	548	90%
Total:	612	100%

Offices

Table 26: Implied parking accumulation assuming AM peak employment trip budget not breached

Time	Arrival %	Departure %	Trip arrivals	Trip departures	Accumulation
07:00-08:00	18%	2%	1258	167	1091
08:00-09:00	37%	4%	**2616**	266	3440
09:00-10:00	13%	4%	912	268	4084
10:00-11:00	4%	3%	294	195	4183
11:00-12:00	4%	4%	266	264	**4185**
12:00-13:00	5%	8%	359	554	3990
13:00-14:00	6%	5%	435	364	4062
14:00-15:00	4%	5%	307	325	4045
15:00-16:00	3%	8%	195	565	3674
16:00-17:00	3%	13%	197	912	2960
17:00-18:00	2%	27%	149	1843	1267
18:00-19:00	1%	18%	67	1215	119
Total	100%	100%	7056	6937	-

Source: Mott MacDonald and TRICS
Note: Assumed no overnight parking. Early departures are assumed to represent drop-offs.

Converting to live data

Time Period	Arrivals	Departures	Arr	Dep	Acc	*Acc Profile*
0700-0800	18%	2%	1258	167	1091	*0.26*
0800-0900	37%	4%	2616	266	3441	*0.82*
0900-1000	13%	4%	912	268	4085	*0.98*
1000-1100	4%	3%	294	195	4184	*1.00*
1100-1200	4%	4%	266	264	4186	*1.00*
1200-1300	5%	8%	359	554	3991	*0.95*
1300-1400	6%	5%	435	364	4062	*0.97*
1400-1500	4%	5%	307	325	4044	*0.97*
1500-1600	3%	8%	195	565	3674	*0.88*
1600-1700	3%	13%	197	912	2959	*0.71*
1700-1800	2%	27%	149	1843	1265	*0.30*
1800-1900	1%	18%	67	1215	117	*0.03*
	100%	101%	7055	6938		

Relationship of Arrivals/Departures and Accumulation

Arr/Acc	*Dep/Acc*
1.153071	*0.153071*
0.760244	*0.077303*
0.223256	*0.065606*
0.070268	*0.046606*
0.063545	*0.063067*
0.089952	*0.138812*
0.10709	*0.089611*
0.075915	*0.080366*
0.053076	*0.153783*
0.066577	*0.308212*
0.117787	*1.456917*
0.57265	*10.38462*

Source: https://www.greatercambridgeplanning.org/media/1234/nec-aap-transport-evidence-base.pdf

Residential

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	228	0.068	15	228	0.270	15	228	0.338
08:00 - 09:00	15	228	0.125	**15**	**228**	**0.366**	**15**	**228**	**0.491**
09:00 - 10:00	15	228	0.123	15	228	0.167	15	228	0.290
10:00 - 11:00	15	228	0.110	15	228	0.135	15	228	0.245
11:00 - 12:00	15	228	0.118	15	228	0.134	15	228	0.252
12:00 - 13:00	15	228	0.127	15	228	0.129	15	228	0.256
13:00 - 14:00	15	228	0.127	15	228	0.128	15	228	0.255
14:00 - 15:00	15	228	0.122	15	228	0.150	15	228	0.272
15:00 - 16:00	15	228	0.240	15	228	0.163	15	228	0.403
16:00 - 17:00	15	228	0.231	15	228	0.136	15	228	0.367
17:00 - 18:00	**15**	**228**	**0.300**	15	228	0.141	15	228	0.441
18:00 - 19:00	15	228	0.277	15	228	0.136	15	228	0.413
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.968			2.055			4.023

Appendix B.5 AAP Transport Evidence Base

Converting to live data

Time Period	Arrivals	Departures
0700-0800	0.068	0.270
0800-0900	0.125	0.366
0900-1000	0.123	0.167
1000-1100	0.110	0.135
1100-1200	0.118	0.134
1200-1300	0.127	0.129
1300-1400	0.127	0.128
1400-1500	0.122	0.150
1500-1600	0.240	0.163
1600-1700	0.231	0.136
1700-1800	0.300	0.141
1800-1900	0.277	0.136
	1.968	2.055

Percentages		
Time Period	Arrivals	Departures
0700-0800	3%	13%
0800-0900	6%	18%
0900-1000	6%	8%
1000-1100	6%	7%
1100-1200	6%	7%
1200-1300	6%	6%
1300-1400	6%	6%
1400-1500	6%	7%
1500-1600	12%	8%
1600-1700	12%	7%
1700-1800	15%	7%
1800-1900	14%	7%
	100%	100%

Labs

Data from: **17/1799/FUL New Cavendish Labs on the West site**

Table 7.2: Amended Hourly Person Trip Rates per 100m² and the Resulting Trips for the Proposed Development (37,696m²)

Time	Amended Total Person Trip Rates			Total Person Trips for Proposed Development		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
07:00-08:00	0.360	0.123	0.483	136	46	182
08:00-09:00	0.904	0.097	1.000	341	37	377
09:00-10:00	1.151	0.150	1.300	434	56	490
10:00-11:00	0.580	0.158	0.738	219	60	278
11:00-12:00	0.493	0.244	0.737	186	92	278
12:00-13:00	0.475	0.835	1.310	179	315	494
13:00-14:00	0.869	0.580	1.449	328	219	546
14:00-15:00	0.898	0.315	1.213	339	119	457
15:00-16:00	0.220	0.658	0.878	83	248	331
16:00-17:00	0.263	0.984	1.247	99	371	470
17:00-18:00	0.132	1.036	1.168	50	391	440
18:00-19:00	0.159	0.826	0.984	60	311	371
07:00-19:00	6.503	6.006	12.509	2,451	2,264	4,715

Converting to live data

Table 7.2: Amended Hourly Person Trip Rates per 100m2 and the Resulting Trips for the Proposed Development (37,696m2)

	Amended Total Person Trip Rates			Total Person Trips for Proposed Development							
Time Period	Arrivals	Departures	Two-way	Arrivals		Departures		Two-way	Accumulation		Arr/Acc	Dep/Acc
0700-0800	0.360	0.123	0.483	136	6%	46	2%	162	*90*	*8%*	1.5111111	0.5111111
0800-0900	0.904	0.097	1.000	341	*14%*	37	*2%*	377	*394*	*33%*	0.8654822	0.0939086
0900-1000	1.151	0.150	1.300	434	*18%*	56	*2%*	490	*772*	*64%*	0.5621762	0.0725389
1000-1100	0.580	0.158	0.738	219	*9%*	60	*3%*	278	*931*	*78%*	0.2352309	0.0644468
1100-1200	0.493	0.244	0.737	166	*7%*	92	*4%*	278	*1005*	*84%*	0.1651741	0.0915423
1200-1300	0.475	0.635	1.310	179	*7%*	315	*14%*	494	*869*	*73%*	0.2059839	0.3624856
1300-1400	0.869	0.580	1.449	328	*13%*	219	*10%*	546	*978*	*82%*	0.3353783	0.2239264
1400-1500	0.898	0.315	1.213	339	*14%*	119	*5%*	457	*1198*	*100%*	0.2829716	0.0993322
1500-1600	0.220	0.658	0.878	83	*3%*	248	*11%*	331	*1033*	*86%*	0.0803485	0.2400774
1600-1700	0.263	0.984	1.247	99	*4%*	371	*16%*	470	*761*	*64%*	0.130092	0.4875164
1700-1800	0.132	1.036	1.168	50	*2%*	391	*17%*	440	*420*	*35%*	0.1190476	0.9309524
1800-1900	0.159	0.826	0.984	60	*2%*	311	*14%*	371	*169*	*14%*	0.3550296	1.8402367
	6.503	6.006	12.509	2451	*100%*	2264	*100%*	4715				
				2434		*2265*		*4694*				

Relationship of Arrivals/Departures and Accumulation

Labs Sensitivity Test Data

S_0404_16_FL-Transport_Assessment
The Bradfield Centre Planning Application 2016

Data below from a survey of the Peterhouse Technology Park, taken from Table 4.2 of the TA, and Appendix BGH 29

Estimated Car Park Occupancy at 07:00: 20

Time Period	Arrivals		Departures		Accum.	
0700-0800	21	12%	2	1%	38	*34%*
0800-0900	44	25%	10	6%	72	*64%*
0900-1000	37	21%	4	2%	105	*94%*
1000-1100	11	6%	5	3%	111	*99%*
1100-1200	8	5%	7	4%	112	*100%*
1200-1300	12	7%	20	11%	104	*93%*
1300-1400	18	10%	12	7%	110	*98%*
1400-1500	10	6%	11	6%	110	*98%*
1500-1600	6	3%	13	8%	102	*91%*
1600-1700	4	2%	30	17%	76	*68%*
1700-1800	4	2%	39	22%	41	*37%*
1800-1900	2	1%	22	12%	22	*20%*
Totals	177	100%	175	99%		

Relationship of Arrivals/Departures and Accumulation

Arr/Acc	*Dep/Acc*
0.552632	*0.052632*
0.611111	*0.138889*
0.352381	*0.038095*
0.099099	*0.045045*
0.071429	*0.0625*
0.115385	*0.192308*
0.163636	*0.109091*
0.090909	*0.1*
0.058824	*0.127451*
0.052632	*0.394737*
0.097561	*0.95122*
0.090909	*1*

Offices

		Spaces
Office Parking Spaces:		64
Car park occupancy prior to 0700:	*2.5%*	62
Peak car park occupancy:	*85%*	53
		22%

peak occupancy=>

Time Period	Arrivals		Departures		Accum.	
0700-0800	16	18%	2	2%	14	26%
0800-0900	33	37%	3	4%	44	82%
0900-1000	12	13%	3	4%	52	98%
1000-1100	4	4%	2	3%	53	100%
1100-1200	3	4%	3	4%	53	100%
1200-1300	5	5%	7	8%	50	95%
1300-1400	6	6%	5	5%	51	97%
1400-1500	4	4%	4	5%	51	97%
1500-1600	2	3%	7	8%	46	88%
1600-1700	2	3%	12	13%	37	71%
1700-1800	2	2%	23	27%	16	30%
1800-1900	1	1%	15	18%	1	3%
Total:	89	100%	88	100%		

Labs

Lab Parking Spaces:		547
Car park occupancy prior to 0700:	*2.5%*	533
Peak car park occupancy:	*85%*	453

Time Period	Arrivals		Departures		Accum.	
0700-0800	51	6%	17	2%	34	8%
0800-0900	129	14%	14	2%	149	33%
0900-1000	164	18%	21	2%	292	64%
1000-1100	83	9%	23	3%	352	78%
1100-1200	63	7%	35	4%	380	84%
1200-1300	68	7%	119	14%	329	73%
1300-1400	124	13%	83	10%	370	82%
peak occupancy=> 1400-1500	128	14%	45	5%	453	100%
1500-1600	31	3%	94	11%	391	86%
1600-1700	37	4%	140	16%	288	64%
1700-1800	19	2%	148	17%	159	35%
1800-1900	23	2%	118	14%	64	14%
Total:	921	100%	857	100%		

Lab Sensitivity Test

Time Period	Arrivals		Departures		Accum.	
0700-0800	85	12%	8	1%	154	34%
0800-0900	178	25%	40	6%	291	64%
0900-1000	150	21%	16	2%	425	94%
1000-1100	45	6%	20	3%	449	99%
1100-1200	32	5%	28	4%	453	100%
1200-1300	49	7%	81	11%	421	93%
1300-1400	73	10%	49	7%	445	98%
1400-1500	40	6%	45	6%	445	98%
1500-1600	24	3%	53	7%	413	91%
1600-1700	16	2%	121	17%	308	68%
1700-1800	16	2%	158	22%	166	37%
1800-1900	8	1%	89	13%	89	20%
	717	100%	708	100%		

Notes

- Based upon data from planning application for The Bradfield Centre (S/0404/16/FL)
- Total No. trips varies from main assessment as it is calculated from the relationship between arr/dep and accumulation.

Residential

Residential Parking Spaces: 22

Time Period	Arrivals		Departures		Accum.	
0700-0800	1	3%	6	13%	18	80%
0800-0900	3	6%	8	18%	12	56%
0900-1000	3	6%	4	8%	11	51%
1000-1100	2	6%	3	7%	11	49%
1100-1200	3	6%	3	7%	10	47%
1200-1300	3	6%	3	6%	10	47%
1300-1400	3	6%	3	6%	10	47%
1400-1500	3	6%	3	7%	10	44%
1500-1600	5	12%	4	8%	11	52%
1600-1700	5	12%	3	7%	13	61%
1700-1800	7	15%	3	7%	17	77%
1800-1900	6	14%	3	7%	20	91%
Totals	43	100%	45	100%		

Development Vehicle Trip Generation Summary

	Office Vehicle Trips			Lab Vehicle Trips			Total Commercial Vehicle Trips			Residential Vehicle Trips			Total Development Vehicle Trips			Development Vehicle Trip Budget		Remaining Budget After Application	
Time Period	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Arr Diff**	**Dep Diff**
0700-0800	16	2	14	51	17	34	67	20	48	1	6	18	69	25	65				
0800-0900	33	3	44	129	14	149	162	17	193	3	8	12	165	25	205	214	142	49	117
0900-1000	12	3	52	164	21	292	176	25	344	3	4	11	179	28	355				
1000-1100	4	2	53	83	23	352	87	25	405	2	3	11	89	28	416				
1100-1200	3	3	53	63	35	380	66	38	433	3	3	10	69	41	444				
1200-1300	5	7	50	68	119	329	72	126	379	3	3	10	75	129	390				
1300-1400	6	5	51	124	83	370	130	87	422	3	3	10	132	90	432				
1400-1500	4	4	51	128	45	453	132	49	**505**	3	3	10	135	52	514				
1500-1600	2	7	46	31	94	391	34	101	437	5	4	11	39	105	449				
1600-1700	2	12	37	37	140	288	40	152	325	5	3	13	45	155	339				
1700-1800	2	23	16	19	148	159	21	171	175	7	3	17	27	174	192	92	182	65	8
1800-1900	1	15	1	23	118	64	24	133	65	6	3	20	30	136	86				
Totals	89	88		921	857		1010	945		43	45		1054	990					

Assumptions

611 employment car parking spaces
22 residential car parking spaces
Commercial spaces split proportionally between offices and labs as per building parking allocation
Trips are profiled according to the land use parking accumulation
Assumes 85% car parking occupancy of allocated spaces at commercial land use peak
Assumes 2.5% of commercial spaces occupied prior to 0700
Assumes 100% utilisation of residential car parking spaces

Development Vehicle Trip Generation Summary - Commercial Sensitivity Test

	Office Vehicle Trips			Lab Vehicle Trips (Sensitity Scenario)			Total Commercial Vehicle Trips			Residential Vehicle Trips			Total Development Vehicle Trips			Development Vehicle Trip Budget		Remaining Budget After Application	
Time Period	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Accum.**	**Arrivals**	**Departures**	**Arr Diff**	**Dep Diff**
0700-0800	16	2	14	85	8	154	101	10	91	1	6	18	102	16	108				
0800-0900	33	3	44	178	40	291	211	44	258	3	8	12	214	52	270	214	142	0	90
0900-1000	12	3	52	150	16	425	161	20	400	3	4	11	164	23	411				
1000-1100	4	2	53	45	20	449	48	23	425	2	3	11	51	26	436				
1100-1200	3	3	53	32	28	453	36	32	**429**	3	3	10	38	35	440				
1200-1300	5	7	50	49	81	421	53	88	395	3	3	10	56	91	405				
1300-1400	6	5	51	73	49	445	78	53	420	3	3	10	81	56	430				
1400-1500	4	4	51	40	45	445	44	49	416	3	3	10	47	52	425				
1500-1600	2	7	46	24	53	413	27	60	382	5	4	11	32	63	394				
1600-1700	2	12	37	16	121	308	19	133	268	5	3	13	24	136	282				
1700-1800	2	23	16	16	158	166	18	181	105	7	3	17	25	184	122	92	182	67	-2
1800-1900	1	15	1	8	89	89	9	104	10	6	3	20	15	107	30				
Totals	89	88		717	708		806	796		43	45		849	841					

Assumptions

As above

Commercial Development

Source: Smart Journeys Data for CB1, October 2019

	5-day Ave
Car Driver	11.3%
Car Passenger	0.3%
Taxi	0.3%
Train	22.9%
Bus	4.1%
P&R	1.4%
Walk/Run	13.0%
Cycle	46.8%
Total:	100%

Resultant Trips for Cambridge North

	AM		PM	
	Arr	Dep	Arr	Dep
Car Driver	162	17	21	171
Car Passenger	5	1	1	5
Taxi	5	1	1	5
Train	329	35	42	348
Bus	59	6	8	62
P&R	20	2	3	21
Walk/Run	187	20	24	197
Cycle	673	72	86	711
Total:	**1440**	**154**	**185**	**1521**

Residential Development

Source: North East Cambridge AAP Transport Evidence Base Appendix B.5 C3 Mixed Private/Affordable Housing Trip Rates per Dwelling

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TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS No. Days	ARRIVALS Ave. DWELLS	ARRIVALS Trip Rate	DEPARTURES No. Days	DEPARTURES Ave. DWELLS	DEPARTURES Trip Rate	TOTALS No. Days	TOTALS Ave. DWELLS	TOTALS Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	228	0.104	15	228	0.458	15	228	0.562
08:00 - 09:00	15	228	0.185	**15**	**228**	**0.791**	**15**	**228**	**0.976**
09:00 - 10:00	15	228	0.200	15	228	0.269	15	228	0.469
10:00 - 11:00	15	228	0.162	15	228	0.205	15	228	0.367
11:00 - 12:00	15	228	0.181	15	228	0.217	15	228	0.398
12:00 - 13:00	15	228	0.210	15	228	0.200	15	228	0.410
13:00 - 14:00	15	228	0.203	15	228	0.198	15	228	0.401
14:00 - 15:00	15	228	0.199	15	228	0.236	15	228	0.435
15:00 - 16:00	**15**	**228**	**0.552**	15	228	0.267	15	228	0.819
16:00 - 17:00	15	228	0.435	15	228	0.232	15	228	0.667
17:00 - 18:00	15	228	0.507	15	228	0.231	15	228	0.738
18:00 - 19:00	15	228	0.414	15	228	0.215	15	228	0.629
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.352			3.519			6.871

TRICS Multi-modal Total People Trips

Converting to live data Dwellings: 425

Time Period	Trip Rates Arr	Trip Rates Dep	Trip Generation Arr	Trip Generation Dep
0700-0800	0.104	0.458	44	195
0800-0900	0.185	0.791	79	336
0900-1000	0.200	0.269	85	114
1000-1100	0.162	0.205	69	87
1100-1200	0.181	0.217	77	92
1200-1300	0.210	0.200	89	85
1300-1400	0.203	0.198	86	84
1400-1500	0.199	0.236	85	100
1500-1600	0.552	0.267	235	113
1600-1700	0.435	0.232	185	99
1700-1800	0.507	0.231	215	98
1800-1900	0.414	0.215	176	91
Total:	**3.352**	**3.519**	**1425**	**1496**

Method of Travel to Work	E01017987 : Cambridge 008A	Non-car driver trips	%
All categories: Method of travel to work	1,437	658	100%
Work mainly at or from home	114		
Underground, metro, light rail, tram	3		
Train	122	122	19%
Bus, minibus or coach	44	44	7%
Taxi	1	1	0%
Motorcycle, scooter or moped	2	2	0%
Driving a car or van	153		0%
Passenger in a car or van	12	12	2%
Bicycle	252	252	38%
On foot	224	224	34%
Other method of travel to work	1	1	0%
Not in employment	509		

Resultant Trips for Cambridge North

	AM		PM		Mode Share
	Arr	Dep	Arr	Dep	
Car Driver	3	8	7	3	3%
Car Passenger	1	6	4	2	2%
Taxi	0	0	0	0	0%
Train	14	61	39	18	18%
Bus	5	22	14	6	6%
Walk/Run	26	112	71	32	33%
Cycle	29	126	80	36	37%
Total:	**79**	**336**	**215**	**98**	**100%**

Note: Car driver trips extracted from assessment. Remaining trips split according to 2011 Census data for CB1

Total Cambridge North Development Multi-Modal Trip Generation

	AM Arr	AM Dep	PM Arr	PM Dep
Car Driver	165	25	27	174
Car Passenger	6	7	4	7
Taxi	5	1	1	5
Train	343	96	81	365
Bus	64	28	22	69
P&R	20	2	3	21
Walk/Run	213	132	95	230
Cycle	702	198	166	748
Total:	**1518**	**490**	**400**	**1619**

Average Mode Share	
Car Driver	10%
Car Passenger	1%
Taxi	0.3%
Train	22%
Bus	5%
P&R	1%
Walk/Run	17%
Cycle	45%
Total:	**100%**

Appendix C Commercial Development Origin Destination Assessment

Cambridge North, Forecast Employees

Data on Employees provided by Bidwells as per ES Vol.1, Chapter 15 - Socio Economics

Total employees:	4296	
Ground floor uses:	277	Agreed as ancillary, supporting uses.
Office/lab support roles:	402	
Office/lab professional roles:	3617	

Breakdown of Employees as per ES Vol.1, Chapter 15 - Socio Economics

Building	Floorspace	Employees	Use
Mobility Hub	207	10	Ancillary use
Labs S6 and S7 - Ground Floor	1168	56	Ancillary use
Labs S6 and S7	21169	756	Labs
Residential - Ground Floor	1006	48	Ancillary use
S9 Science Hub - Ground Floor	1808	86	Ancillary use
S9 Science Hub	15750	1171	Labs
S4 Office building - Ground Floor	67	3	Ancillary use
S4 Office building	13693	1245	Office
S8 Office building - Ground Floor	1569	74	Ancillary use
S8 Office building	9305	846	Office
Total	**65742**	**4295**	
Lab	**36919**	**1927**	48%
Office	**22998**	**2091**	52%
Ancillary	5825	277	

Calculation of Typical Employee Attendance

Data source: *British Council for Offices, The Future of UK Office Densities, September 2022*

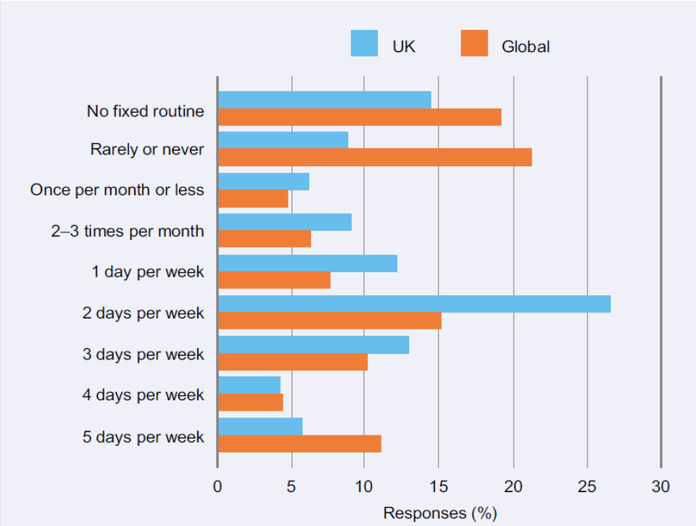

Figure 12
The number of days workers plan to be in the office
(Leesman dataset Q3/2021 to Q2/2022: 27,611 global participants, 3,569 UK participants)

Figure 12: The Number of Days Workers Plan to be in the Office	%	Cambridge North Employees	Re-profiled, Excl. No Routine	Employees in at Least 1 day/week	Typical Peak Weekday Attendance
No Fixed Routine	14.5%	583			426
Rarely or never	8.0%	322	9%		
Once per month or less	6.0%	241	7%		
2-3 times per month	9.0%	362	11%		
1 day per week	12.5%	502	15%		502
2 days per week	26.5%	1065	31%		1065
3 days per week	13.5%	543	16%	73%	543
4 days per week	4.5%	181	5%		181
5 days per week	5.5%	221	6%		221
Total:	**100%**	**4019**	**3436**		**2938**
			Attendance Percentage:		**73%**

Assumptions:

1 Calculation excludes employees stated as rarely or never in the office.
2 Employees in less than three times per month considered unlikely to contribute to typical peak weekday.
3 Employees with 'no fixed routine' profiled to reflect trend in base data for attendance throughout the week.
4 Calculation is based upon total number of employees (minus ground floor uses).
5 No discount has been applied to total employees to account for sick leave, annual leave or ad-hoc working away from the office e.g. meetings, travel for business etc.

Forecast Residential Population Growth from NECAAP

Source: North East Cambridge Area Action Plan Draft High Level Transport Strategy
https://consultations.greatercambridgeplanning.org/sites/gcp/files/2021-12/NECAAPEBHighLevelTransportStrategyDec21V1.pdf

Table 4.2:Development Quantum Residential (Units)

Site	Base	2025	2030	2035	2040
Core Site	0	0	1,949	3,898	5,848
St. John's	0	0	0	0	0
Brookgate	0	550	550	1,550	1,550
Science Park	0	0	0	0	0
Business Park	0	0	0	350	500
Cowley Road	0	100	250	350	450
Nuffield Road	0	100	250	350	450
Merlin Place	0	25	75	100	125
Regional College	0	0	0	0	0
VW Garage	0	75	75	75	75
Trinity Hall Farm	0	0	0	0	0
Total	**0**	**850**	**3,149**	**6,673**	**8,998**

Table 4.2 Extract

Site	2040	MSOA
Core Site	5848	Cambridge 003
St Johns's	0	-
Brookgate	1550	South Cambs 007
Science Park	0	-
Business Park	500	Cambridge 003
Cowley Road	450	Cambridge 003
Nuffield Road	450	Cambridge 003
Merlin Place	125	Cambridge 003
Regional College	0	-
VW Garage	75	Cambridge 001
Trinity Hall Farm	0	-
Total	8998	

Table 4.2 Summary

MSOA	Dwellings
Cambridge 001	75
Cambridge 003	7373
South Cambs 007	1550
	8998

Data on Future Residents provided by Bidwells as per ES Vol.1, Chapter 15 - Socio Economics

Table 15.5: Estimated Population Profile of the Proposed Development

		BTR	SALE	AFFORDABLE/ SHARED OWNERSHIP	TOTAL
0-2	Nursery	18	6	6	30
3-4	Pre-school/nursery	6	2	3	11
5-11	Primary (R-Y6)	11	5	4	20
12-16	Secondary (Y7-11)	6	3	2	11
17-18	Sixth Form (Y12-13)/ Economically Active	5	2	2	9
19-24	University/Economically Active	80	21	10	112
25-34	Economically Active	191	55	17	262
35-49	Economically Active	89	32	18	139
50-64	Economically Active	39	19	15	73
65+	Economically Active/Retired	21	22	21	64
All	**Total**	**468**	**166**	**98**	**732**

Age	Total	Economically Active	
Nursery	30	0	0%
Pre-school/nursery	11		
Primary	20		
Secondary	11		
Sixth Form/Economically Active	9	9	1%
University/Economically Active	112	112	15%
Economically Active	262	262	36%
Economically Active	139	139	19%
Economically Active	73	73	10%
Economically Active/Retired	64	64	9%
Total:	**731**	**659**	**90%**
People per dwelling	**1.72**		

Waterbeach/Northstowe Population Change Calculations

Site	Forecast number of Dwellings	Census 2011 Average Dwelling Occupancy	Census 2011 Economically Active %	Resultant Workday Population
Waterbeach	6500	2.4	80%	12728
Northstowe	8000	2.4	80%	15665

Cambridge North Commercial Trip Assessment

Forecast Commercial Trip Origins

				Adjustment for Future Population Growth													
Usual residence	**Area Description**	**2011 Census South Cambridgshire 007 Trip Origins**		**Census 2011 Population**			**TEMPro Household Growth Factor (2011-2041)**	**TEMPro applied to Census 2011 Population**	**Difference**	**Manual Growth for AAP and New Towns**	**Adjusted Pop Change**	**Adjusted Pop**	**Change Factor**	**Adjusted 2011 Census South Cambridgeshire Trip Origins**		**Staff Origin Trips (All Modes)**
E02003719 : Cambridge 001	Kings Hedges	375	4%	9,142	7%	1%	1.4597	13,345	4,203	144	4347	13489	1.48	553	4%	111
E02003720 : Cambridge 002	Centred on Gilbert Rd, east of Histon Rd	183	2%	9,070	7%	1%	1.4598	13,240	4,170		4170	13240	1.46	267	2%	54
E02003721 : Cambridge 003	Chesterton	374	4%	9,405	8%	1%	1.4596	13,728	4,323	14156	18479	27884	2.96	1,109	8%	223
E02003722 : Cambridge 004	Milton Rd, Chesterton Rd, Mitcham Corner	240	3%	8,629	7%	1%	1.4598	12,597	3,968		3968	12597	1.46	350	2%	70
E02003723 : Cambridge 005	Eddington	88	1%	9,785	8%	1%	1.4596	14,282	4,497		4497	14282	1.46	128	1%	26
E02003724 : Cambridge 006	Barnwell	277	3%	9,907	8%	1%	1.4598	14,462	4,555		4555	14462	1.46	404	3%	81
E02003725 : Cambridge 007	City Centre, Newnham, West Cambridge	96	1%	15,017	12%	1%	1.4598	21,922	6,905		6905	21922	1.46	140	1%	28
E02003726 : Cambridge 008	Petersfield	131	2%	8,333	7%	1%	1.4599	12,165	3,832		3832	12165	1.46	191	1%	38
E02003727 : Cambridge 009	Romsey	183	2%	9,252	7%	1%	1.4597	13,505	4,253		4253	13505	1.46	267	2%	54
E02003728 : Cambridge 010	N of Cherry Hinton Rd, S of Mill Rd	138	2%	9,386	8%	1%	1.4598	13,702	4,316		4316	13702	1.46	201	1%	40
E02003729 : Cambridge 011	Cherry Hinton	107	1%	8,780	7%	1%	1.4600	12,819	4,039		4039	12819	1.46	156	1%	31
E02003730 : Cambridge 012	Trumpington	76	1%	8,034	6%	1%	1.4597	11,727	3,693		3693	11727	1.46	111	1%	22
E02003731 : Cambridge 013	Addenbrookes to just S of Cherry Hinton Rd	87	1%	9,127	7%	1%	1.4599	13,325	4,198		4198	13325	1.46	127	1%	26
Cambridge City:		**2355**	**27%**	**123,867**	**100%**			**180,818**	**56,951**		**71,251**	**195,118**		**4,007**	**27%**	**805**
E02003775 : South Cambridgeshire 001	Willingham, Over	184	2%	6,877	5%	1%	1.5659	10,769	3,892		3892	10769	1.57	288	2%	58
E02003776 : South Cambridgeshire 002	Cottenham	207	2%	6,543	4%	1%	1.5659	10,246	3,703		3703	10246	1.57	324	2%	65
E02003777 : South Cambridgeshire 003	Northstowe	150	2%	6,647	4%	1%	1.5658	10,408	3,761	15665	19426	26073	3.92	588	4%	118
E02003778 : South Cambridgeshire 004	Waterbeach	214	2%	6,014	4%	1%	1.5654	9,414	3,400	12728	16128	22142	3.68	788	5%	158
E02003779 : South Cambridgeshire 005	Boxworth, Bar Hill, Dry Drayton	114	1%	5,048	3%	0%	1.5661	7,906	2,858		2858	7906	1.57	179	1%	36
E02003780 : South Cambridgeshire 006	Histon, Impington	429	5%	10,600	7%	1%	1.6148	17,117	6,517		6517	17117	1.61	693	5%	139
E02003781 : South Cambridgeshire 007	Site location	397	5%	6,361	4%	1%	1.6143	10,269	3,908	2403	6311	12672	1.99	791	5%	159
E02003783 : South Cambridgeshire 009	W Cambridge, Girton south to Barton	102	1%	7,065	5%	1%	1.6147	11,408	4,343		4343	11408	1.61	165	1%	33
E02003784 : South Cambridgeshire 010	W of Cam: Hardwick, Kingston, Little Eversden	167	2%	8,643	6%	1%	1.5660	13,535	4,892		4892	13535	1.57	262	2%	53
E02003785 : South Cambridgeshire 011	Cambridge Airport, Fulbourne	168	2%	8,695	6%	1%	1.6148	14,041	5,346		5346	14041	1.61	271	2%	55
E02003786 : South Cambridgeshire 012	Great Shelford	72	1%	6,104	4%	1%	1.6148	9,857	3,753		3753	9857	1.61	116	1%	23
E02003787 : South Cambridgeshire 013	Barrington west to Gamlingay	46	1%	7,229	5%	1%	1.6260	11,754	4,525		4525	11754	1.63	75	1%	15
E02003788 : South Cambridgeshire 014	Haslingfield, Foxton, Harston	81	1%	6,359	4%	1%	1.6257	10,338	3,979		3979	10338	1.63	132	1%	26
E02003789 : South Cambridgeshire 015	Sawston	89	1%	7,145	5%	1%	1.5658	11,188	4,043		4043	11188	1.57	139	1%	28
E02003790 : South Cambridgeshire 016	Linton	95	1%	9,528	6%	1%	1.5660	14,921	5,393		5393	14921	1.57	149	1%	30
E02003791 : South Cambridgeshire 017	Babraham, Whittlesford, Duxford, Ickleton	79	1%	7,816	5%	1%	1.6258	12,707	4,891		4891	12707	1.63	128	1%	26
E02003792 : South Cambridgeshire 018	Meldreth, Melbourn	82	1%	9,367	6%	1%	1.5657	14,666	5,299		5299	14666	1.57	128	1%	26
E02003793 : South Cambridgeshire 019	Bassingbourn, Guilden Morden, Steeple Morden	33	0%	7,492	5%	1%	1.6258	12,180	4,688		4688	12180	1.63	54	0%	11
E02006873 : South Cambridgeshire 020	Cambourne	149	2%	7,185	5%	1%	1.5659	11,251	4,066		4066	11251	1.57	233	2%	47
E02006874 : South Cambridgeshire 021	Papworth Everard, Fen Drayton, Bourn	123	1%	8,037	5%	1%	1.6255	13,064	5,027		5027	13064	1.63	200	1%	40
South Cambridgeshire:		**2981**	**34%**	**148,755**	**100%**			**237,037**	**88,282**		**119,078**	**267,833**		**5,703**	**39%**	**1146**
Central Bedfordshire	Sandy, Biggleswade, Leighton Buzzard	95	1%	254,381	29%	22%	1.4235	362,111	107,730		107730	362111	1.42	135	1%	27
East Cambridgeshire	Ely, Soham	1300	15%	83,818	9%	7%	1.5522	130,102	46,284		46284	130102	1.55	2,018	14%	405
Forest Heath	Newmarket, Mildenhall, Brandon	421	5%	59,748	7%	5%	1.4700	87,830	28,082		28082	87830	1.47	619	4%	124
Huntingdonshire	Huntingdon, St Neots, St Ives	832	10%	169,508	19%	15%	1.4045	238,074	68,566		68566	238074	1.40	1,169	8%	235
North Hertfordshire	Hitchin, Letchworth, Baldock, Royston	169	2%	127,114	14%	11%	1.4242	181,036	53,922		53922	181036	1.42	241	2%	48
St Edmundsbury	Bury St Edmunds, Haverhill	386	4%	111,008	13%	10%	1.4143	156,999	45,991		45991	156999	1.41	546	4%	110
Uttlesford	Saffron Walden, Great Dunmow	132	2%	79,443	9%	7%	1.4003	111,244	31,801		31801	111244	1.40	185	1%	37
Neighbouring Districts:		**3335**	**38%**	**885,020**	**100%**			**1,267,396**	**382,376**		**382,376**	**1,267,396**		**4,912**	**34%**	**987**
			100%	**1,157,642**		**100%**	**-**	**1,685,251**	**527,609**	**45,096**	**572,705**	**1,730,347**		**14,621**	**100%**	**2,938**

Cambridge North Commercial Trip Assessment

Forecast Mode Share of Commercial Trips to/from Cambridge North

		2011 Census Baseline Mode Share Data										Forecast Cambridge North Mode Share Data											Forecast Cambridge North Commercial Mode Share								
Usual residence	**Area Description**	**All categories: Method of travel to work (2001 specification)**	**Train**	**Bus, minibus or coach**	**Taxi**	**Motorcycle, scooter or moped**	**Driving a car or van**	**Passenger in a car or van**	**Bicycle**	**On foot**	**Data Source**	**Train**	**Bus, minibus or coach**	**Taxi**	**Motorcycle, scooter or moped**	**Driving a car or van**	**Passenger in a car or van**	**Bicycle**	**On foot**		**Notes on Forecast Assumptions**	**Train**	**Bus, minibus or coach**	**Taxi**	**Motorcycle, scooter or moped**	**Driving a car or van**	**Passenger in a car or van**	**Bicycle**	**On foot**	**Total**
E02003719 : Cambridge 001	Kings Hedges	100%	0%	1%	0%	1%	31%	5%	33%	28%	South Cambs 007	0%	10%	0%	1%	1%	5%	53%	30%	100%	Bus mode share increased as MSOA lies immediately south of busway stops at Cambridge Regional College. Cycle share amended to reflect potential demonstrated by 004	0	11	0	1	1	6	59	33	112
E02003720 : Cambridge 002	Centred on Gilbert Rd, east of Histon Rd	100%	1%	3%	1%	2%	44%	1%	45%	3%	South Cambs 007	0%	25%	1%	2%	7%	2%	60%	3%	100%	Bus mode share increased to account for proximity to Orchard Park West busway stop	0	13	0	1	4	1	32	2	54
E02003721 : Cambridge 003	Chesterton	100%	0%	2%	1%	0%	34%	2%	41%	20%	South Cambs 007	0%	15%	1%	0%	1%	2%	51%	30%	100%	Walk increased for comparability with 001 and proximity, bus increased due to access to Citi 2 service, cycle increased	0	33	2	1	2	4	114	67	223
E02003722 : Cambridge 004	Milton Rd, Chesterton Rd, Mitcham Corner	100%	0%	5%	0%	2%	36%	2%	41%	13%	South Cambs 007	0%	22%	0%	2%	4%	2%	55%	15%	100%	Bus increased to reflect Citi 2 access, cycle increased in line with other Cambs City locations	0	15	0	1	3	1	39	11	71
E02003723 : Cambridge 005	Eddington	100%	1%	3%	1%	1%	23%	1%	54%	16%	Cambridge 012	0%	15%	1%	1%	12%	1%	54%	16%	100%	Bus increased, cycle increased in line with other Cambs City locations	0	4	0	0	3	0	14	4	26
E02003724 : Cambridge 006	Barnwell	100%	0%	5%	0%	0%	41%	4%	38%	12%	South Cambs 007	0%	10%	0%	0%	5%	5%	60%	20%	100%	Cycle and walk increased to reflect Chisholm Trail access improvements, bus opportunity via Citi 2	0	8	0	0	4	4	49	16	81
E02003725 : Cambridge 007	City Centre, Newnham, West Cambridge	100%	0%	2%	0%	0%	14%	1%	49%	34%	Cambridge 012	5%	20%	0%	0%	10%	4%	55%	6%	100%	Train increased to reflect station access at both ends of journey. Walk reduced to match adjacent Cambridge 008 observed level. Bus and car share increased to balance	1	6	0	0	3	1	15	2	28
E02003726 : Cambridge 008	Petersfield	100%	0%	12%	0%	0%	37%	0%	45%	6%	South Cambs 007	30%	10%	0%	0%	9%	0%	45%	6%	100%	Train increased to reflect station access at both ends of journey.	12	4	0	0	3	0	17	2	38
E02003727 : Cambridge 009	Romsey	100%	0%	4%	1%	0%	41%	3%	50%	2%	South Cambs 007	30%	10%	1%	0%	5%	3%	50%	2%	100%	Train and bus increased to reflect station access and Citi 2 bus route	16	5	0	0	3	1	27	1	53
E02003728 : Cambridge 010	N of Cherry Hinton Rd, S of Mill Rd	100%	1%	3%	0%	0%	25%	1%	37%	32%	Cambridge 012	30%	15%	0%	0%	6%	1%	45%	2%	100%	Train and bus increased to reflect station access and Citi 2 bus route	12	6	0	0	2	1	18	1	40
E02003729 : Cambridge 011	Cherry Hinton	100%	0%	16%	0%	2%	39%	4%	32%	6%	Cambridge 012	0%	20%	0%	2%	12%	4%	60%	2%	100%	Bus increased to reflect Citi 2 route, cycling increased to reflect Chisholm Trail opportunity	0	6	0	1	4	1	19	1	32
E02003730 : Cambridge 012	Trumpington	100%	0%	16%	0%	0%	50%	0%	34%	0%	South Cambs 007	30%	10%	0%	0%	10%	5%	45%	0%	100%	Train increasedto reflect station access at both ends of journey. Cycle increased to reflect adjacent baseline levels	7	2	0	0	2	1	10	0	22
E02003731 : Cambridge 013	Addenbrookes to just S of Cherry Hinton Rd	100%	0%	2%	0%	1%	61%	2%	31%	2%	South Cambs 007	19%	20%	0%	1%	15%	2%	40%	2%	100%	Bus mode share increased to reflect Citi2 service, access to Cambridge and South Cambridge Stations	5	5	0	0	4	1	10	1	25
	Cambridge City:	**100%**	**0%**	**6%**	**0%**	**1%**	**37%**	**2%**	**41%**	**13%**		**11%**	**16%**	**0%**	**1%**	**7%**	**3%**	**52%**	**10%**	**100%**		**53**	**120**	**3**	**5**	**38**	**23**	**423**	**140**	**806**
E02003775 : South Cambridgeshire 001	Willingham, Over	100%	1%	1%	0%	1%	88%	4%	5%	0%	South Cambs 007	0%	45%	0%	1%	39%	4%	11%	0%	100%	Bus and bike increased by to reflect busway proximity	0	26	0	1	23	3	6	0	58
E02003776 : South Cambridgeshire 002	Cottenham	100%	0%	0%	0%	3%	80%	7%	8%	0%	South Cambs 007	10%	30%	0%	3%	34%	7%	15%	0%	100%	Bus and train and bike increased to reflect proximity Waterbeach and busway	7	20	0	2	22	5	10	0	65
E02003777 : South Cambridgeshire 003	Northstowe	100%	0%	1%	1%	3%	81%	5%	8%	1%	South Cambs 007	0%	50%	1%	3%	16%	5%	25%	0%	100%	Bus and cycle mode shares increased to reflect busway access to Cambridge North from Northstowe	0	59	1	3	19	6	30	0	118
E02003778 : South Cambridgeshire 004	Waterbeach	100%	0%	4%	0%	3%	67%	5%	20%	1%	South Cambs 007	50%	7%	0%	3%	5%	5%	30%	0%	100%	Train, bus and bike increased relfecting opportunities for access by these modes	79	11	0	4	8	8	47	0	158
E02003779 : South Cambridgeshire 005	Boxworth, Bar Hill, Dry Drayton	100%	0%	5%	1%	0%	89%	3%	3%	0%	South Cambs 007	0%	5%	1%	0%	89%	3%	3%	0%	100%	No change - limited opportunities	0	2	0	0	32	1	1	0	36
E02003780 : South Cambridgeshire 006	Histon, Impington	100%	0%	1%	0%	2%	50%	3%	29%	14%	South Cambs 007	0%	25%	0%	2%	6%	3%	50%	14%	100%	Bus and cycle mode shares increased to reflect busway proximity	0	35	0	2	8	4	70	20	139
E02003781 : South Cambridgeshire 007	Site location	100%	1%	1%	0%	1%	40%	2%	24%	31%	South Cambs 007	0%	5%	0%	1%	2%	2%	50%	40%	100%	Cycle mode share increased to reflect likely distances of trips, bus increased to reflect P&R access at Milton	0	8	0	2	3	3	79	64	159
E02003783 : South Cambridgeshire 009	W Cambridge, Girton south to Barton	100%	0%	4%	0%	1%	69%	5%	20%	2%	South Cambs 007	0%	10%	0%	1%	63%	5%	20%	2%	100%	Bus increased	0	3	0	0	21	2	6	1	33
E02003784 : South Cambridgeshire 010	W of Cam: Hardwick, Kingston, Little Eversden	100%	0%	2%	0%	1%	87%	2%	8%	0%	South Cambs 007	0%	10%	0%	1%	71%	2%	15%	0%	100%	Bus and bike increased	0	5	0	1	37	1	8	0	52
E02003785 : South Cambridgeshire 011	Cambridge Airport, Fulbourne	100%	0%	2%	0%	2%	75%	3%	14%	4%	South Cambs 007	0%	10%	0%	2%	56%	3%	25%	4%	100%	Bus and bike increased	0	5	0	1	31	2	14	2	54
E02003786 : South Cambridgeshire 012	Great Shelford	100%	0%	1%	0%	4%	78%	4%	10%	3%	South Cambs 007	30%	5%	0%	4%	42%	4%	15%	0%	100%	Train, bus and bike increased relfecting opportunities for access by these modes	7	1	0	1	10	1	4	0	23
E02003787 : South Cambridgeshire 013	Barrington west to Gamlingay	100%	0%	0%	0%	0%	91%	4%	2%	0%	South Cambs 007	10%	0%	0%	0%	83%	4%	2%	0%	100%	Opportunity for train access via Shepreth	2	0	0	0	12	1	0	0	15
E02003788 : South Cambridgeshire 014	Haslingfield, Foxton, Harston	100%	2%	0%	0%	1%	80%	5%	9%	2%	South Cambs 007	25%	10%	0%	1%	50%	5%	9%	0%	100%	Rail access at Foxton	7	3	0	0	13	1	2	0	26
E02003789 : South Cambridgeshire 015	Sawston	100%	0%	3%	0%	0%	87%	4%	3%	2%	South Cambs 007	22%	3%	0%	0%	67%	4%	3%	0%	100%	Rail access at Shelford and Whittlesford Parkway	6	1	0	0	19	1	1	0	28
E02003790 : South Cambridgeshire 016	Linton	100%	0%	2%	0%	0%	93%	2%	3%	0%	South Cambs 007	10%	2%	0%	0%	83%	2%	3%	0%	100%	Rail access at Whittlesford Parkway and Great Chesterford	3	1	0	0	25	1	1	0	30
E02003791 : South Cambridgeshire 017	Babraham, Whittlesford, Duxford, Ickleton	100%	11%	7%	0%	2%	73%	3%	4%	0%	Cambridge 012	25%	7%	0%	2%	59%	3%	4%	0%	100%	Rail access at Whittlesford Parkway and Great Chesterford	6	2	0	1	15	1	1	0	26
E02003792 : South Cambridgeshire 018	Meldreth, Melbourn	100%	16%	4%	0%	0%	68%	8%	3%	1%	Cambridge 012	30%	10%	0%	0%	49%	8%	3%	0%	100%	Rail access at Meldreth and Shepreth	8	3	0	0	13	2	1	0	26
E02003793 : South Cambridgeshire 019	Bassingbourn, Guilden Morden, Steeple Morde	100%	5%	1%	0%	0%	87%	3%	3%	1%	Cambridge 012	12%	1%	0%	0%	82%	3%	3%	0%	100%	Rail access at Royston	1	0	0	0	9	0	0	0	11
E02006873 : South Cambridgeshire 020	Cambourne	100%	0%	3%	0%	0%	91%	3%	3%	0%	South Cambs 007	0%	15%	0%	0%	79%	3%	3%	0%	100%	Bus connections to Cambridge	0	7	0	0	37	1	2	0	47
E02006874 : South Cambridgeshire 021	Papworth Everard, Fen Drayton, Bourn	100%	0%	2%	0%	2%	90%	3%	3%	0%	South Cambs 007	0%	10%	0%	2%	80%	3%	5%	0%	100%	Bus connections to Cambridge, and bike via busway	0	4	0	1	32	1	2	0	40
	South Cambridgeshire:	**100%**	**2%**	**2%**	**0%**	**1%**	**78%**	**4%**	**9%**	**3%**		**11%**	**13%**	**0%**	**1%**	**53%**	**4%**	**15%**	**3%**	**100%**		**125**	**195**	**1**	**19**	**389**	**45**	**285**	**86**	**1146**
Central Bedfordshire	Sandy, Biggleswade, Leighton Buzzard	100%	8%	1%	0%	0%	89%	0%	0%	0%	Cambridge 012	9%	1%	0%	0%	89%	0%	0%	0%	100%	No change - limited opportunities	2	0	0	0	24	0	0	0	27
East Cambridgeshire	Ely, Soham	100%	36%	2%	0%	0%	54%	5%	2%	0%	Cambridge 012	65%	5%	0%	0%	14%	10%	5%	0%	100%	Train increased reflecting access to Ely and Newmarket stations, bus opportunities, e-bikes	264	20	0	2	57	41	20	2	405
Forest Heath	Newmarket, Mildenhall, Brandon	100%	10%	4%	0%	0%	75%	10%	0%	0%	Cambridge 012	30%	10%	0%	0%	49%	10%	0%	0%	100%	Rail access at Newmarket and Brandon	37	12	1	1	61	12	1	0	124
Huntingdonshire	Huntingdon, St Neots, St Ives	100%	1%	16%	0%	1%	77%	4%	1%	1%	Cambridge 012	0%	56%	0%	1%	31%	10%	2%	0%	100%	Bus mode share increasedto reflect busway access from St Ives and Huntingdon	0	131	0	2	73	23	5	0	234
North Hertfordshire	Hitchin, Letchworth, Baldock, Royston	100%	41%	1%	0%	0%	54%	3%	0%	1%	Cambridge 012	63%	1%	0%	0%	33%	3%	0%	0%	100%	Rail access opportunities	30	0	0	0	16	1	0	0	48
St Edmundsbury	Bury St Edmunds, Haverhill	100%	9%	11%	0%	0%	72%	6%	1%	2%	Cambridge 012	35%	15%	0%	0%	44%	6%	1%	0%	100%	Rail and bus access opportunities	38	16	0	0	48	6	1	0	110
Uttlesford	Saffron Walden, Great Dunmow	100%	19%	1%	0%	0%	76%	2%	1%	1%	Cambridge 012	35%	1%	0%	0%	61%	2%	1%	0%	100%	Rail access opportunities	13	0	0	0	23	1	0	0	37
	Neighbouring Districts:											**34%**	**13%**	**0%**	**0%**	**46%**	**6%**	**1%**	**0%**	**100%**		**385**	**182**	**1**	**4**	**302**	**84**	**27**	**2**	**986**
																						564	**497**	**5**	**29**	**728**	**152**	**734**	**228**	**2937**
																						19%	**17%**	**0%**	**1%**	**25%**	**5%**	**25%**	**8%**	**100%**

Cambridge City	7%	15%	0%	1%	5%	3%	52%	17%	100%
South Cambridgeshire	11%	17%	0%	2%	34%	4%	25%	8%	100%
Other	39%	18%	0%	0%	31%	9%	3%	0%	100%

Appendix D Residential Development Origin Destination Assessment

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

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population	All usual residents aged 16 and over in employment the week before the census
units	Persons
date	2011
usual residence	E02003781 : South Cambridgeshire 007 (2011 super output area - middle layer)

				E02003726 : Cambridge 008 (2011 super output area - middle layer) Mode Share Data																		
place of work	All categories: Method of travel to work (2001 specification)			No. Trips	Train		Bus, minibus or coach		Taxi		Motorcycle, scooter or moped		Driving a car or van		Passenger in a car or van		Bicycle		On foot		
E02003719 : Cambridge 001	21	1%		13	0	0%	1	8%	0	0%	0	0%	2	15%	0	0%	4	31%	6	46%	100%
E02003720 : Cambridge 002	17	1%		11	0	0%	0	0%	0	0%	0	0%	2	18%	0	0%	2	18%	7	64%	100%
E02003721 : Cambridge 003	248	9%		121	0	0%	17	14%	0	0%	0	0%	34	28%	1	1%	52	43%	17	14%	100%
E02003722 : Cambridge 004	61	2%		61	0	0%	1	2%	0	0%	0	0%	12	20%	0	0%	39	64%	9	15%	100%
E02003723 : Cambridge 005	117	4%		165	0	0%	4	2%	0	0%	0	0%	14	8%	0	0%	103	62%	44	27%	100%
E02003724 : Cambridge 006	90	3%		67	0	0%	1	1%	1	1%	0	0%	15	22%	1	1%	19	28%	30	45%	100%
E02003725 : Cambridge 007	392	14%	55%	1063	3	0%	21	2%	0	0%	5	0%	44	4%	4	0%	504	47%	482	45%	100%
E02003726 : Cambridge 008	73	3%		274	4	1%	2	1%	0	0%	0	0%	14	5%	3	1%	76	28%	175	64%	100%
E02003727 : Cambridge 009	30	1%		37	0	0%	0	0%	0	0%	0	0%	8	22%	0	0%	12	32%	17	46%	100%
E02003728 : Cambridge 010	57	2%		82	0	0%	2	2%	0	0%	1	1%	22	27%	1	1%	33	40%	23	28%	100%
E02003729 : Cambridge 011	54	2%		36	0	0%	4	11%	0	0%	0	0%	8	22%	0	0%	20	56%	4	11%	100%
E02003730 : Cambridge 012	193	7%		348	3	1%	5	1%	1	0%	0	0%	34	10%	2	1%	131	38%	172	49%	100%
E02003731 : Cambridge 013	159	6%		284	2	1%	47	17%	0	0%	1	0%	47	17%	4	1%	154	54%	29	10%	100%
E02003775 : South Cambridgeshire 001	16	1%		0	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0%
E02003776 : South Cambridgeshire 002	23	1%		6	0	0%	0	0%	0	0%	0	0%	3	50%	2	33%	1	17%	0	0%	100%
E02003777 : South Cambridgeshire 003	22	1%		9	0	0%	0	0%	0	0%	0	0%	7	78%	1	11%	1	11%	0	0%	100%
E02003778 : South Cambridgeshire 004	67	2%		14	2	14%	1	7%	2	14%	0	0%	5	36%	0	0%	4	29%	0	0%	100%
E02003779 : South Cambridgeshire 005	23	1%		9	0	0%	0	0%	0	0%	0	0%	7	78%	0	0%	0	0%	2	22%	100%
E02003780 : South Cambridgeshire 006	77	3%		27	0	0%	4	15%	1	4%	1	4%	11	41%	2	7%	6	22%	2	7%	100%
E02003781 : South Cambridgeshire 007	396	15%		131	0	0%	16	12%	0	0%	0	0%	48	37%	0	0%	59	45%	8	6%	100%
E02003783 : South Cambridgeshire 009	15	1%		20	0	0%	2	10%	0	0%	1	5%	4	20%	0	0%	12	60%	1	5%	100%
E02003784 : South Cambridgeshire 010	19	1%		12	0	0%	2	17%	0	0%	0	0%	8	67%	0	0%	2	17%	0	0%	100%
E02003785 : South Cambridgeshire 011	70	3%	34%	26	0	0%	2	8%	1	4%	0	0%	15	58%	1	4%	5	19%	2	8%	100%
E02003786 : South Cambridgeshire 012	21	1%		17	5	29%	0	0%	1	6%	0	0%	6	35%	0	0%	5	29%	0	0%	100%
E02003787 : South Cambridgeshire 013	9	0%		4	0	0%	0	0%	0	0%	0	0%	4	100%	0	0%	0	0%	0	0%	100%
E02003788 : South Cambridgeshire 014	29	1%		15	1	7%	1	7%	0	0%	0	0%	11	73%	0	0%	2	13%	0	0%	100%
E02003789 : South Cambridgeshire 015	21	1%		5	0	0%	0	0%	0	0%	0	0%	4	80%	1	20%	0	0%	0	0%	100%
E02003790 : South Cambridgeshire 016	12	0%		10	0	0%	2	20%	0	0%	0	0%	6	60%	0	0%	2	20%	0	0%	100%
E02003791 : South Cambridgeshire 017	56	2%		120	9	8%	45	38%	0	0%	1	1%	51	43%	5	4%	6	5%	3	3%	100%
E02003792 : South Cambridgeshire 018	19	1%		16	6	38%	0	0%	0	0%	0	0%	9	56%	0	0%	0	0%	1	6%	100%
E02003793 : South Cambridgeshire 019	4	0%		3	0	0%	0	0%	0	0%	0	0%	3	100%	0	0%	0	0%	0	0%	100%
E02006873 : South Cambridgeshire 020	25	1%		10	0	0%	3	30%	0	0%	0	0%	6	60%	1	10%	0	0%	0	0%	100%
E02006874 : South Cambridgeshire 021	11	0%		15	0	0%	0	0%	0	0%	0	0%	13	87%	1	7%	0	0%	1	7%	100%
Central Bedfordshire	7	0%		12	0	0%	0	0%	0	0%	2	17%	6	50%	2	17%	1	8%	1	8%	100%
East Cambridgeshire	101	4%		49	7	14%	3	6%	0	0%	0	0%	24	49%	6	12%	3	6%	6	12%	100%
Forest Heath	23	1%		35	0	0%	4	11%	0	0%	0	0%	28	80%	0	0%	1	3%	2	6%	100%
Huntingdonshire	84	3%	10%	47	0	0%	4	9%	0	0%	0	0%	41	87%	0	0%	2	4%	0	0%	100%
North Hertfordshire	20	1%		32	18	56%	0	0%	0	0%	0	0%	11	34%	0	0%	1	3%	2	6%	100%
St Edmundsbury	32	1%		25	1	4%	0	0%	0	0%	0	0%	21	84%	1	4%	2	8%	0	0%	100%
Uttlesford	16	1%		23	7	30%	0	0%	0	0%	0	0%	12	52%	3	13%	1	4%	0	0%	100%
Total:	**2,730**	**100%**	**100%**	**3,254**	**68**		**194**		**7**		**12**		**620**		**42**		**1,265**		**1,046**		
			Mode Share:		**2%**		**6%**		**0%**		**0%**		**19%**		**1%**		**39%**		**32%**		

Forecast Cambridge North Mode Share Data								
Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	
0%	8%	0%	0%	0%	0%	46%	46%	100%
0%	0%	0%	0%	0%	0%	50%	50%	100%
0%	19%	0%	0%	0%	1%	60%	20%	100%
0%	16%	0%	0%	0%	0%	64%	20%	100%
0%	11%	0%	0%	0%	0%	62%	27%	100%
0%	7%	1%	0%	0%	1%	60%	30%	100%
0%	29%	0%	0%	0%	0%	60%	10%	100%
20%	14%	0%	0%	0%	1%	60%	5%	100%
20%	15%	0%	0%	0%	0%	60%	5%	100%
20%	13%	0%	1%	0%	1%	60%	5%	100%
20%	15%	0%	0%	0%	0%	60%	5%	100%
20%	17%	0%	0%	0%	1%	60%	2%	100%
20%	16%	0%	0%	0%	1%	60%	2%	100%
0%	80%	0%	0%	0%	0%	20%	0%	100%
0%	40%	0%	0%	0%	33%	27%	0%	100%
0%	60%	0%	0%	0%	11%	29%	0%	100%
50%	7%	14%	0%	0%	0%	29%	0%	100%
0%	98%	0%	0%	2%	0%	0%	0%	100%
0%	62%	4%	4%	0%	0%	31%	0%	100%
0%	12%	0%	0%	0%	0%	60%	28%	100%
0%	30%	0%	5%	0%	0%	60%	5%	100%
0%	40%	0%	0%	0%	0%	60%	0%	100%
0%	10%	4%	0%	0%	4%	67%	15%	100%
65%	0%	6%	0%	0%	0%	29%	0%	100%
50%	50%	0%	0%	0%	0%	0%	0%	100%
73%	12%	0%	0%	0%	0%	15%	0%	100%
80%	10%	0%	0%	0%	5%	5%	0%	100%
0%	50%	30%	0%	0%	0%	20%	0%	100%
50%	40%	0%	1%	0%	4%	5%	0%	100%
60%	40%	0%	0%	0%	0%	0%	0%	100%
90%	10%	0%	0%	0%	0%	0%	0%	100%
0%	75%	15%	0%	0%	10%	0%	0%	100%
0%	75%	15%	0%	0%	10%	0%	0%	100%
7%	60%	0%	17%	0%	17%	0%	0%	100%
75%	6%	0%	0%	0%	0%	7%	12%	100%
75%	15%	0%	0%	2%	2%	6%	0%	100%
0%	85%	0%	0%	0%	0%	15%	0%	100%
90%	0%	0%	0%	8%	2%	0%	0%	100%
83%	5%	0%	0%	0%	4%	8%	0%	100%
80%	3%	0%	0%	0%	13%	4%	0%	100%

Cambridge North Working Pop		Cambridge North Residential Mode Share							
		Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot
5		0	0	0	0	0	0	2	2
4		0	0	0	0	0	0	2	2
60		0	11	0	0	0	0	36	12
15		0	2	0	0	0	0	9	3
28		0	3	0	0	0	0	18	8
22		0	2	0	0	0	0	13	7
95	365	0	27	0	0	0	0	57	9
18		4	2	0	0	0	0	11	1
7		1	1	0	0	0	0	4	0
14		3	2	0	0	0	0	8	1
13		3	2	0	0	0	0	8	1
47		9	8	0	0	0	0	28	1
38		8	6	0	0	0	1	23	1
4		0	3	0	0	0	0	1	0
6		0	2	0	0	0	2	1	0
5		0	3	0	0	0	1	2	0
16		8	1	2	0	0	0	5	0
6		0	5	0	0	0	0	0	0
19		0	12	1	1	0	0	6	0
96		0	12	0	0	0	0	57	27
4		0	1	0	0	0	0	2	0
5		0	2	0	0	0	0	3	0
17	226	0	2	1	0	0	1	11	3
5		3	0	0	0	0	0	1	0
2		1	1	0	0	0	0	0	0
7		5	1	0	0	0	0	1	0
5		4	1	0	0	0	0	0	0
3		0	1	1	0	0	0	1	0
14		7	5	0	0	0	1	1	0
5		3	2	0	0	0	0	0	0
1		1	0	0	0	0	0	0	0
6		0	5	1	0	0	1	0	0
3		0	2	0	0	0	0	0	0
2		0	1	0	0	0	0	0	0
24		18	1	0	0	0	0	2	3
6		4	1	0	0	0	0	0	0
20	68	0	17	0	0	0	0	3	0
5		4	0	0	0	0	0	0	0
8		6	0	0	0	0	0	1	0
4		3	0	0	0	0	1	0	0
659	659	95	149	7	2	1	8	317	80
Mode Share:		**14%**	**23%**	**1%**	**0%**	**0%**	**1%**	**48%**	**12%**

Appendix E Mode Share Sensitivity Test Vehicle Trip Analysis

Mode Share Sensitivity Test
Offices

Employee office split	52%
Forecast Car Driver %	25%
	382
Car park occupancy prior to 0700:	*2.5%*
Car park occupancy prior to 0700:	373
Starting Accumulation:	10

	Time Period	Arrivals	Departures	Accum.
	0700-0800	18%	2%	26%
	0800-0900	37%	4%	82%
	0900-1000	13%	4%	98%
peak occupancy=>	1000-1100	4%	3%	100%
	1100-1200	4%	4%	100%
	1200-1300	5%	8%	95%
	1300-1400	6%	5%	97%
	1400-1500	4%	5%	97%
	1500-1600	3%	8%	88%
	1600-1700	3%	13%	71%
	1700-1800	2%	27%	30%
	1800-1900	1%	18%	3%
	Total:	100%	100%	

Time Period	Arrivals	Departures	Accum.
0700-0800	66	9	85
0800-0900	138	14	209
0900-1000	48	14	243
1000-1100	16	10	248
1100-1200	14	14	248
1200-1300	19	30	237
1300-1400	23	20	240
1400-1500	16	17	239
1500-1600	10	30	219
1600-1700	10	49	180
1700-1800	8	99	89
1800-1900	4	65	27
Total:	373	373	

Labs

Employee lab split 48%
Forecast Car Driver % 25%
352

Car park occupancy prior to 0700: *2.5%*
Car park occupancy prior to 0700: 343

Starting Accumulation: 9

Time Period	Arrivals	Departures	Accum.
0700-0800	6%	2%	8%
0800-0900	14%	2%	33%
0900-1000	18%	2%	64%
1000-1100	9%	3%	78%
1100-1200	7%	4%	84%
1200-1300	7%	14%	73%
1300-1400	13%	10%	82%
peak occupancy=> 1400-1500	14%	5%	100%
1500-1600	3%	11%	86%
1600-1700	4%	16%	64%
1700-1800	2%	17%	35%
1800-1900	2%	14%	14%
Total:	100%	100%	

Time Period	Arrivals	Departures	Accum.
0700-0800	19	7	35
0800-0900	48	6	77
0900-1000	61	8	130
1000-1100	31	9	152
1100-1200	23	14	161
1200-1300	25	48	139
1300-1400	46	33	152
1400-1500	48	18	182
1500-1600	12	38	156
1600-1700	14	56	114
1700-1800	7	59	61
1800-1900	8	47	23
Total:	343	343	

Scenario Comparison with Vehicle Trip Budgets
(includes office, lab and residential trips)

Time Period	Arrivals		Departures	
	Trips	Budget	Trips	Budget
0800-0900	189	214	28	142
1700-1800	22	92	161	182

Peak car parking accumulation 421

Lab Sensitivity Test

Time Period	Arrivals	Departures	Accum.
0700-0800	12%	1%	34%
0800-0900	25%	6%	64%
0900-1000	21%	2%	94%
1000-1100	6%	3%	99%
peak occupancy=> 1100-1200	5%	4%	100%
1200-1300	7%	11%	93%
1300-1400	10%	7%	98%
1400-1500	6%	6%	98%
1500-1600	3%	7%	91%
1600-1700	2%	17%	68%
1700-1800	2%	22%	37%
1800-1900	1%	13%	20%
	100%	100%	

Notes
- Based upon data from planning application for The Bradfield Centre (S/0404/16/FL)
- Total No. trips varies from main assessment as it is calculated from the relationship between arr/dep and accumulation.

Employee lab split 48%
Forecast Car Driver % 25%
352

Car park occupancy prior to 0700: *2.5%*
Car park occupancy prior to 0700: 343

Starting Accumulation: 9

Time Period	Arrivals	Departures	Accum.
0700-0800	41	4	46
0800-0900	85	20	111
0900-1000	72	8	175
1000-1100	21	10	187
1100-1200	16	14	189
1200-1300	23	39	173
1300-1400	35	24	184
1400-1500	19	22	182
1500-1600	12	26	168
1600-1700	8	59	117
1700-1800	8	77	48
1800-1900	4	43	9
Total:	343	343	

Scenario Comparison with Vehicle Trip Budgets
(includes office, lab and residential trips)

Time Period	Arrivals		Departures	
	Trips	Budget	Trips	Budget
0800-0900	226	214	42	142
1700-1800	22	92	179	182

Peak car parking accumulation 436

Average Lab Profile

Starting Accumulation: 9

Time Period	Arrivals		Departures		Accum.	
0700-0800	9%	31	2%	6	21%	71
0800-0900	19%	68	4%	13	49%	167
0900-1000	19%	68	2%	8	79%	272
1000-1100	8%	27	3%	10	88%	304
1100-1200	6%	20	4%	14	92%	316
1200-1300	7%	25	13%	45	83%	284
1300-1400	12%	42	8%	29	90%	309
1400-1500	10%	34	6%	20	99%	340
1500-1600	3%	12	9%	32	89%	304
1600-1700	3%	11	17%	59	66%	226
1700-1800	2%	8	20%	70	36%	123
1800-1900	2%	6	13%	46	17%	58
	100%	352	100%	352		

Scenario Comparison with Vehicle Trip Budgets
(includes office, lab and residential trips)

Time Period	Arrivals		Departures	
	Trips	Budget	Trips	Budget
0800-0900	209	214	35	142
1700-1800	22	92	172	182

Peak car parking accumulation 579